chain reaction

jourdann utke

CHAIN REACTION

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of North Dakota Sate University

By

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for the Degree of
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Primary Thesis Advisor

Thesis Committee Chair 05/12/11

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abstract

This **chain reaction** thesis will be created by the necessity of human interaction. It is both an examination of human connection as well as spatial configurations. This will show how human connections are crucial to growth and development as individuals as well as a community.

People within small communities or neighborhoods are fully responsible for creating, developing, and maintaining relationships. Personal relationships with others satisfy human interaction needs. It is important to people to have interaction, emotions, relationships, bonds, etc. with others.

Through the design of a co-housing community near the cities of Mapleton, Kindred, and Fargo, North Dakota, I hope to show how important community relationships are to those who inhabit. Using a mixed-method research approach, this project will reveal how human interaction and connection play a major part of society's communities and neighborhoods.

Key words: **relationships, human interaction, human connection.**

What are beneficial characteristics of relationships found within small co-housing communities or neighborhoods that should be incorporated into future design developments?

problem statement

statement of intent

statement of intent

typology

This thesis will be based on residential neighborhoods and co-housing communities. The neighborhoods created by the necessity of human interaction is both an examination of human connection as well as spatial configurations. This will show how human connections are crucial to growth, development, and community. The community site is located near the cities of Mapleton, Kindred, and Fargo, ND.

theoretical premise / unifying idea

claim: People in small communities or neighborhoods have relationships with one another on a personal level which is necessary for human growth, development, and satisfaction of human interaction.

supporting premises: People have a need for personal relationships with others in order to develop. These relationships aid in the growth of social development and overall satisfaction.

The people within these small communities or neighborhoods are fully responsible for creating, developing, and maintaining these relationships.

Neighborhoods or communities are shaping the way people relate to one another, take responisibility, and develop.

theoretical premise: Those who surround us have a major effect on who we become. These relationships aid in our development, growth, and overall well-being as individuals.

justification Personal relationships with others within a community satisfies human interaction needs. These relationships help in growth and development as an individual; it is important to the people to have interaction, emotions, relationships, bonds, responsibilities, etc. with others. Growing up in a small rural town I have an understanding of the impact people can make on others. I would not be who I am today without the personal relationships and interactions from the community I had in the past.

statement of intent

proposal

narrative

As members of a community, city, and country, we need to think about our lifestyle choices and how those choices have an effect on those who surround us and the future inhabitants of our communities. Those who surround us have a major effect on who we become. These relationships aid in our development, growth, and overall well-being as individuals.

Residential neighborhoods are beautiful areas. Near the cities of Mapleton, Kindred, and Fargo, North Dakota, a co-housing community is proposed to be designed and built. This site was chosen because of the location. This particular location is special to the project by means of connectivity. This centralized area allows for not only the co-housing community to enjoy the ammenities offered, but also the people in the surrounding areas. This acts as a much closer to home retreat for the guests of the community and opportunities for developing relationships with others. The connections people make within their neighborhood is just as important as the relationships with surrounding cities. It is found near three different sizes of cities which will allow for those who live there to have easy access to work and entertainment. Another reason this site was selected is that it is in a rural area, but with the growth of West Fargo and Horace, there is potential that this area could become engulfed and surrounded as part of the larger city. With that potential, these cities should study and incorporate co-housing into the city planning.

Large homes on large lots of land with a large amount of privacy are extremely popular. This seems to make a more secluded feel to an area. Yes, people do need privacy, but not so much that they feel "cut-off" or "ignored" by the people who live down the street or around the corner. There is a delicate line drawn; when is private too private? People in communities are becoming more secluded from one another; a co-housing community would be able to erase those invisible boundaries and allow for more participation to occur.

Participating in a community is an excellent way to create relationships with those who surround you. One of the main factors to consider is how to create a comfortable and welcoming way to actively promote participation in a community. Co-housing is an excellent way to achieve this. This method of designing and developing promotes growth as a whole, not just an individual scale.

A co-housing community has shared functions which are used daily. This may range from a group kitchen, community center, park, library, workshop, exercise facility, or an arts and craft area. These functions provide a welcoming environment for all ages to engage and participate with each other.

narrative

This co-housing community will be owned and used by those who live there. This specific group of people helps aid in the creation of this community. According to the Cohousing Association of the United States website www.cohousing.org, there are six unique traits of a co-housing community. These traits include the following:

1. Participatory process – a communal effort to design the community to meet all peoples' needs.

2. Neighborhood design – the arrangement of buildings encourage a sense of community. The buildings are usually clustered or oriented toward one another and to a central courtyard.

3. Common facilities – facilities that are used on a daily basis by all people (kitchen, dining room, laundry room, library, exercise area, workshop, craft area, meeting area, etc.).

4. Resident management – group decision making, group meetings to address and resolve problems, or group preparation of meals.

5. Non-hierarchical structure and decision making – consensus decisions made by the community.

6. No shared community economy – the living community is not a place to earn a profit. Members of the community are expected to contribute to the cleanliness and upkeep of the public areas.

user / client description

Anyone who wishes to actively participate in the design and operation of a community such as this is welcome to join. The average size of a co-housing community ranges from 7-67 people, or 20-40 housing units (Cohousing Association United States, 2010).

Each home will have its own garage, but it will be located around the back of the home. The focus of today's neighborhoods seems to be the garage. The garage is the first element of the home you see, but in this community it is the front façade and centralized group areas that will become the main focal point.

Any physical restrictions, medical, or mental health issues will be incorporated into the design of the individual homes and the communal areas as necessary.

user / client description

project elements

Public facilities are excellent ways to provide a welcoming and comfortable environment for people to gather. These facilities house such items as a group kitchen, dining area, library, exercise facility, craft area, meeting area, workshop, etc. This promotes community participation through activities and / or events.

Every home will be customized and designed to fit the needs and requirements of the family who lives there. Homes will be arranged in such a manner that parking will no longer be the focal point of a home. The front façade of the home will be what is seen from the other homes in the community. These homes will be arranged in a cluster around main courtyard areas. This promotes group play and communal efforts to protect children and homes.

Gardens are excellent for many different reasons. A garden is a way of producing food. Gardening is a way of group efforts of cooperation and participation. For some people gardening is a hobby. The food produced will be prepared and eaten as a group meal. There are two community gardens. One is inside the common house for year-round production and the other is outdoors. These provide a more relaxing atmosphere as well as provide food production to become a year long process. Individual garden plots may also be utilized for personal food production or hobby.

North Dakota, formerly part of the Dakota Territory, is located in the upper-Midwest region of the United States along the Canadian border. Winters are typically cold, while the summers are typically hot. Of all the states, North Dakota is the most rural. Agriculture is the primary use of North Dakota's land. Farms and ranches use about 90% of the land (Pearson Education, 2000). The North Dakota land has some of the most fertile soil which provides some of the best farming in the country. The landscape ranges from the Badlands of the western part of the state to the fertile Red River Valley of the eastern. The Missouri River runs through the central part of the state, creating a source of freshwater and irrigation for the surrounding areas (State Master, 2003).

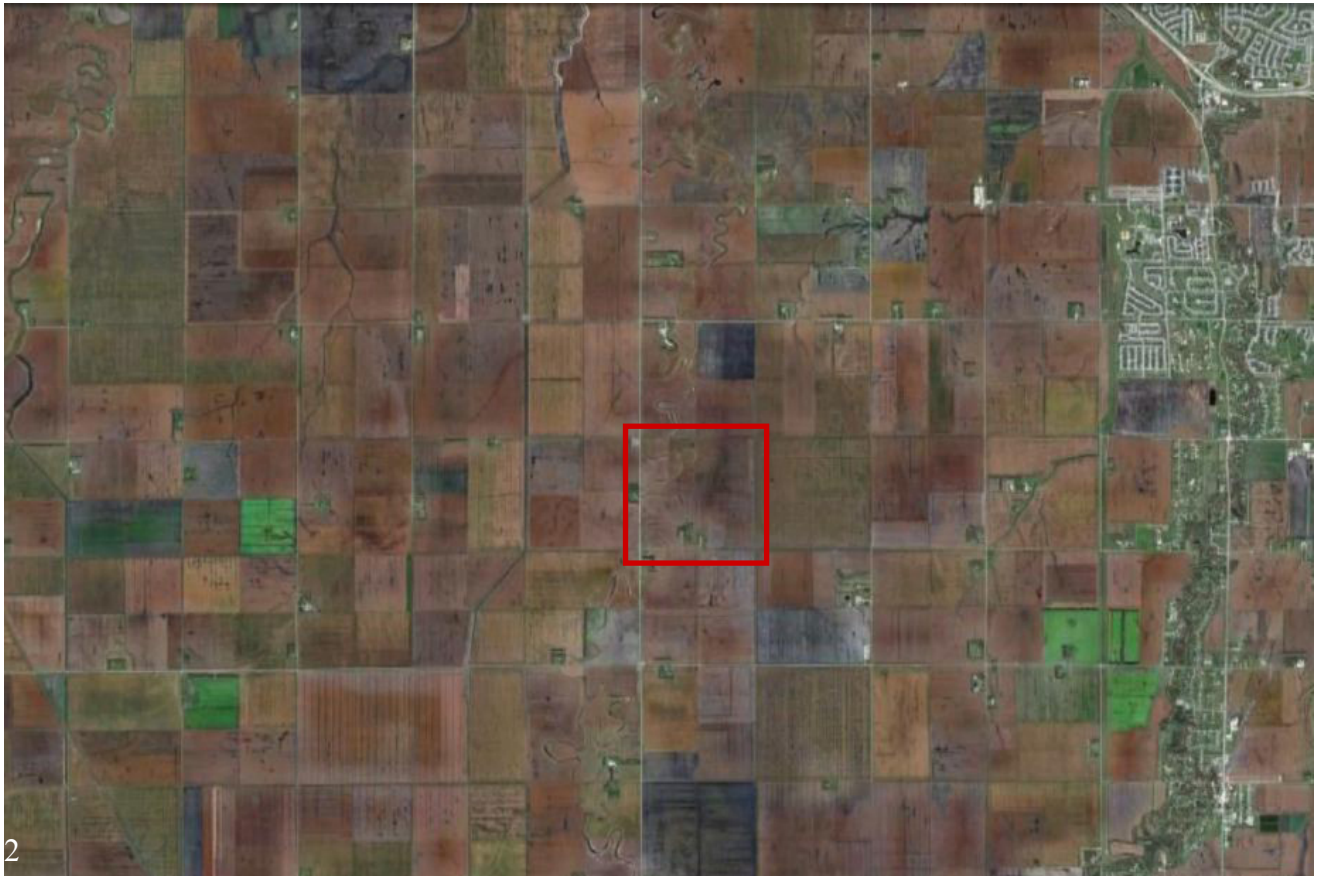
site information

macro

The site is located in Cass County, North Dakota, United States. Cass County is the most populous North Dakotan county (Pearson Education, 2000). The site is near rhe Red River Valley where the cities of Fargo, West Fargo, and Horace are located. North Dakota was the 39th state in the United States of America. North Dakota officially became a state on November 2, 1889.

site information

region



2

The site is found near the cities of Mapleton, Kindred, and Horace, all located in North Dakota. The site is found along the northern edge of Warren township.

This area is not only peaceful, beautiful, and calm, but it is also close to the previously mentioned cities. This is desireable for those individuals who travel to the city for employment purposes. It is a relatively short commute, approximately twenty minutes.

site information

city

The site is located six miles south of Interstate-94 and along the northern portion of Warren Township at the intersection of County Road 15 and 42nd Street South East.

This site has a flat and open landscape. It allows for great views and provides a tranquil setting. The quiet and peaceful sense gained while at the site is something which needs to be experienced. It provided a calm, settling feeling that one rarely obtains while living in the city.

site information

site

4

site information

site images

5

6

7

site information

site images

8

This site was chosen for its relation to a variety of living scales surrounding the area; there are small country farms, two small towns, and a large city. In order for co-housing to be successful, the residents must be able to live, work, and play in a commutable area. The land is flat and has views across the plains that can be seen for miles.

It was chosen for the possible opportunity for future expansion. In the future, Horace may expand their city limits. This co-housing community will have been in operation for years and could possibly become engulfed by the city. If that were to happen, the possibility of the city realizing how beautiful and environmentally conscious this community is, could set the new residential building standards.

site information

micro

project emphasis

co-housing aids in the promotion of development, growth, and overall well-being as individuals. All co-housing communities share similar, if not the same, goals and ideas. All residents have an equal opinion on decisions that have an effect on the community as a whole. People can work together, take the advantages of a private home, and enjoy the convenience of shared services (Fromm, 1991). The people who surround us have an effect on who we become in the future. I want to understand how the designed spatial relationships have an impact on the emotional relationships of the people in the community, and, if possible, how these could be improved.

plan for proceeding

research direction

In order to ensure the completeness and usefulness of this thesis project, there are many areas that need to be taken into consideration. The theoretical premise / unifying idea is the base foundation of the project. The typology shows how small co-housing residents relate to one another due to the spatial design configuration. Historical context is extremely important. In order to help direct the future developments of communities, we must understand what has happened in the past. A site analysis is required to understand and determine how the site is best suited for the project. All programmatic requirements will be met.

design methodology

The research for this thesis will utilize a Mixed Method Qualitative / Quantitative Approach. This method will also include a Concurrent Transformative Strategy yielding both qualitative and quantitative data. The research will be guided by the Theoretical Premise / Unifying Idea.

Qualitative data will be gathered from direct observation, local surveys, interviews, or an archival search.

Quantitative data will be a compilation of both statistical and scientific data. The statistical data will be gathered and analyzed locally or through an archival search. Scientific data is the information that is obtained through instrumentation and / or an experiment, or through an archival search.

The data collected, both types and amounts, will be determined by the research requirements of each premise defined for the Theoretical Premise / Unifying Idea. The information gathered will be analyzed, interpreted, and reported throughout various stages of the research process. This information will be shown in both text and graphic illustrations.

design process documentation

The best way to document a project is to use multiple resources. These resources range from materials that are physically produced (i.e., sketches, hand drawings, physical models) all the way to materials that are electronically produced (i.e., computer drawings, models, renderings, photographs). All physical process work will be saved as a hard copy in a sketch book, and later they will be scanned and saved in a computer file. These will be saved in the same computer file as the electronically produced process work. These items will be saved every two weeks to guarantee complete documentation of the design process.

The conclusion of the design process will be presented by digital means. There will also include a physical model of the proposed project. A thesis manual will be provided for use and reference of future readers or scholars by means of the Institutional Repository. The appropriate sketches will be included in the thesis manual to help better understand the design process of this project.

plan for proceeding

previous studio experience

2nd Year

F 2007 Mike Christenson
- Tea House – Fargo, ND
- Mississippi River Rowing Club – Minneapolis, MN
- Retail Space – Fargo, ND

S 2008 Stephen Wischer
- Piano Lounge – Fargo, ND
- Jacobson House – Fargo, ND

3rd Year

F 2008 Ronald Ramsey
- Community Center – Agincourt, Iowa (fictitious city)
- Lake Agassiz Public Library – Moorhead, MN

S 2009 Steve Martens
- Far North Museum – Fargo, ND

4th Year

F 2009 Darryl Booker
- eco_2 Highrise – San Francisco, CA
- KKE Musical Instrument Competition

S2010 Darryl Booker, Frank Kratky, Paul Gleye
- Dominican Republic Urban Design – Dominican Republic
- Dominican Republic Design Solution – Dominican Republic
- Marvin Windows Competition – Tanzania, Africa

5th Year

F 2010 Cindy Urness
- MXC Co-housing Community – near Brandon, MN

research results & goals

theoretical premise / unifying idea: Those who surround us have a major effect on who we become. These relationships aid in our development, growth, and overall well-being as individuals.

research: In Denmark during the 1970's, co-housing sprung into life. Co-housing is a form of living in a group setting, while still having the privacy of a single home. This method incorporates individual and communal settings which allow for growth socially as well as developmentally. Co-housing has multiple elements. This includes common facilities, private dwellings, and design for social contact (Fromm, 1991). (See Appendix A)

Co-housing communities have a broader vision of the future. They think of others rather than just themselves. They envision places where people work together, live together, all while reducing their carbon footprint on the environment. The effect everyone has on each other within the co-housing community is all interconnected; there are many new ideas, people who share and converse, friends are made, and there are many more benefits of a group community.

> "The idea behind cohousing is to create a small-scale neighborhood where the residents share amenities – often including a common house or community center. As green building and sustainable living have become more mainstream, many cohousing developments are following that model. These developments often feature superior insulation, large windows, provisions for renewal energy sources such as solar panels, and low-toxin building materials such as bamboo flooring" (Wenz, 2008).

During the design development process, the residents participate in multiple ways. Just like any design project, there needs to be an idea which is formulated,

research results & goals

leading to a core leadership group. Next, goals are set and agreed upon. Land must be obtained for this project to be set into motion. An architect must complete plans, followed by contractors bidding on the plans. Once the bid is made, the housing project is built (Fromm, 1991). Within the design process, all residents combine ideas, compare different possibilities, and as a whole make a decision that would benefit all people well. Each individual community has variations of what they would like. This is all taken into consideration, the pros and cons are weighed, and the best communal result is then chosen and set into motion. In a co-housing community, the members are some of the main participants in the design process; who else knows what they want more than the residents themselves?

This system of living in a group setting may be categorized in many different housing types. There is no one right or wrong form of housing; it is a collaboration of different housing types or a consensus of a specific housing style. According to Dorit Fromm's book *Collaborative Communities: cohousing, central living, and other new forms of housing with shared facilities*, these types include the following:

* single family detached housing
* single family attached housing
* multiple family housing
* apartment style housing

Along with the different types of housing comes one more crucial element of the co-housing design; the common house. The common house is a place for people to become more active within their community; the residents may gather and enjoy group meals, community meetings, and so much more. There is an

research results & goals

outdoor space which houses a variety of activities. This includes a community garden, a play area, a park, etc. Individual garden plots are made based on personal interests. These gardens could be used for food production or hobby gardening. The food produced can be used for individual family meals as well as contributed toward group meals. The community garden is used to grow and harvest foods used in the group meals. The residents decide how many group meals or events they would like to do together. An average amount of group meals is two to five times each week. The common house includes the amenities that a typical home would have, such as a kitchen, dining area, living space, library, storage, administrative offices, restrooms, and the list could go on and on. (See Appendix B) Since there is a common house which has a full kitchen, usually the kitchen in the home is significantly smaller; it needs to be just large enough to cook for each individual family. There is usually a very wide range of ages found in co-housing communities. Diversity is an excellent and necessary thing. This allows for a broad mix of people who tend to have more opinions and ideas; they also are open to others opinions and ideas.

The outdoor space is just as important as the indoor space. Outdoors is usually a space which is open to the public, although, there are some outdoor spaces which are private or semi-private. The public outdoor space is also designed for the people of the co-housing community by its residents. This allows for the perfect outdoor space to be created. This can range quite widely depending on the variation of ages found within the community. If it is more of a younger group there might be more playground equipment rather than if it is more of an elderly group there might be more park benches, tables, or places to converse with others. In a very diverse aged group there would probably be a good blend of all elements.

research results & goals

research results & goals

Co-housing communities are run by the members of the community. The residents plan and manage the housing units as well as the common house. They balance privacy and community through individual homes and a common house, as well as private and public outdoor spaces. There are many intentional communities within the United States which share common purpose of personal, religious, or social change. These typically try to "escape" from society or to be self-sufficient, so these communities are located in a more rural area. There are some co-housing communities that are in an urban setting that work just as well as those communities found in a rural setting. These areas are usually designed and planned by the residents who are very much a part of society, such as teachers, administrators, or social workers. "By working together and combining their resources, collaborative housing residents share the advantages of a private home and the convenience of shared services and amenities" (Fromm, 1991).

"Co-housing residents wish to live within the existing society. With the privacy and autonomy of the household secure. Their intention is to strengthen the family by creating supportive social networks, and by sharing certain daily tasks" (Fromm, 1991). The saying "it takes a village to raise a child" is quite fitting for this particular living style. Members of the co-housing community work together to help each other; this creates more security and an unofficial extended family.

Another aspect co-housing has an advantage over a typical neighborhood is that the pedestrian is not overwhelmed by the automobile. Co-housing communities do have vehicular access, but the main focus is the pedestrian and how they move throughout the community. By creating pedestrian streets, this allows for interaction with other residents without making a special trip to

research results & goals

do so. This also applies to areas to sit or pause, such as a patio or park. These pausing spaces are great areas to hold outdoor events, have the children play together, have informal meetings, or just to strike up a conversation with a neighbor. "Circulation holds it all together; movement through the building is an important design factor" (Huxtable, 1997). The way people move throughout spaces is just as important, if not more, than the design of the spaces themselves. The design should be carefully thought out so these two elements of circulation and spatial development become one. This provides a flow that is pleasing to the pedestrians moving through the community. The typical vehicular design in a co-housing community is the vehicles are not centralized; rather the vehicular traffic is only apparent along the outskirts or backside of the community. "Parking is off to the side, so the interior of the community is parklike" (Wenz, 2008). This is to create safety, cohesiveness, and to not make the automobile a focal point. A co-housing community puts the people first and the vehicle last.

In order for co-housing to become the best possible solution for residential architecture, some newer technologies need to be incorporated. Everyone has heard of those "green technologies," but has everyone had the chance to experience the benefits they provide? Co-housing is one way to share responsibility and moderate the usage of energy, goods, or transportation as a whole. Every person's individual consumption must regard the long-term effects on the future of humankind. As architects, we need to develop solutions to conserve and utilize what the earth has to offer. Sustainable design is the answer; it is the future of architecture.

Sustainable design can mean different things to different people. Sustainability is defined as "to keep up or maintain; keep in effect or being" (Landau, 2002). The basic necessity of sustaining is having food, shelter, and water. To take

research results & goals

that a few steps further, as architects we need to create sustainable shelters for people. These sustainable shelters, these homes need to be designed and built in a manner that does not create a large carbon footprint. Carbon footprints are destroying the natural balance of ecosystems, which in return is destroying homes of other species such as plants and animals. The best way to preserve these ecosystems and help future generations meet their own needs is to design in a sustainable manner.

Sustainable design development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Wilson, 1987). Sustainable design is not just the additive products such as solar panels, composting stations, etc., but also the design itself. Utilizing the natural elements of the environment, creating natural ventilation and lighting, wind turbines, or collecting rain water to be reused and recycled can all make a very substantial difference. Resources that are "free," such as air or water, can be converted to something useful, but the excess comes out as waste. In order to maintain the ecosystem – and its overall integrity – sustainable design needs to be flexible, allowing for the unavoidable waste not to create pollution.

One excellent way to incorporate sustainable design into a home is by having an ecoroof. An ecoroof is described by the website of the Office of Sustainable Development as a "vegetative system used in place of a conventional roof. These green roofs, as they are often called, use soil and plants to reduce stormwater runoff, cool the air, reduce air pollution (particularly carbon dioxide), reduce noise, and provide wildlife habitat" (Wenz, 2008). Co-housing communities are sustainable due to the fact that most residents share an appreciation for the environment and want to leave the earth alone as much as possible in order to

maintain the ecosystems. There are typically a variety of sustainable elements incorporated into the co-housing community design.

One method of becoming more sustainable is using what you have and or what you can receive. There are construction sites all over the United States. "The construction process typically wastes 15 to 30 percent of the materials brought on site, creating as much as 8,000 pounds of landfill for a 2,000-square-foot house. Yet it has been estimated that as much as 80 percent of construction waste can be reused or recycled" (Wenz, 2008). The waste from demolition and construction sites is one of the major contributors to local landfills. Promoting recycling and different demolition methods – deconstruction is a way of taking apart a building piece by piece which allows for the reuse of those building materials. These materials could include flooring, timbers, plumbing fixtures, molding, copper pipe, and so much more. Even road construction can recycle their wasted material. The concrete can be ground up and reused as an aggregate for driveways or backfill. This allows for water to seep into the soil where a typical concrete street prevents water seepage. Deconstruction may not be the most economically sound method since it is just slightly profitable. The best part about it is the fact that these perfectly preserved materials are no longer going to be thrown into the landfill. These recycled materials help keep the balance of the environment by not wasting perfectly fine materials.

Sustainable design is not only designing smartly or using environmentally friendly elements to save or create energy. It is also a thing that is constantly changing with the needs of people, the availability of natural resources, or the ability to invent the newest technologies that provide another source of gain. In order to design sustainably, we must learn how to adapt and keep moving toward our future and future generations' futures.

research results & goals

In California it is being recommended that all buildings become more environmentally friendly. By 2020, in residential buildings the energy standard may be required to have a net-zero energy performance; by 2030 it may be required for all buildings to perform this well. This could all be accomplished by new strategies, new technologies, better building standards, and modified utility programs. This is an excellent goal that should be carried out not just in California, but in all of America and the rest of the world. This is an excellent goal for a new co-housing community to try to accomplish.

By designing in an environmentally friendly manner, the overall affect on the residents becomes enlightened. The people feel more at ease and comfortable. A collaborative housing resident said, "…Sometimes I feel that we've found another way to live where it doesn't have to be hectic and crazy and competitive all the time, or lonely. It's a feeling…like together we can somehow do it, that we've become an extended family, part of each other. Then I don't dwell on the newspaper reports, or the bills, or the latest pressure at work. Its just a feeling of real joy and belonging – we're living the difference" (Fromm, 1991). This is the confident, calm, and enjoyable lifestyle everyone should experience in their life.

Co-housing communities are an excellent way to actively become a part of your community. There are increased socialization opportunities, group events and gatherings, the pedestrian movement is more focused and carefully designed, and your community becomes a part of your unofficial extended family. Many close bonds and relationships are formed; your neighbors are your friends and family.

research results & goals

summary
research & goals

The preceding research was gathered and analyzed to support the body and claims presented in the theoretical premise / unifying idea, which states the following:

> Those who surround us have a major effect on who we become. These relationships aid in our development, growth, and overall well-being as individuals.

"…I was very interested in housing forms that balanced privacy and community. As a designer I had been taught how to create privacy, but community was, and is, a gray area in planning and architecture" (Fromm, 1991).

Research was investigated and analyzed to provide evidence that co-housing is an alternative route toward residential architecture by living in a group setting, while still having the privacy of a single home, along with social growth and development. Sustainable design elements and ideas were investigated and taken into consideration. These solutions will make a very substantial difference for the future. Evidence was collected defining the basic terms of community, sustainability, as well as the individual needs of people.

The effect everyone has on each other within the co-housing community is all interconnected; there are many new ideas, people who share and converse, friends are made, and there are many more benefits of a group community. Communal

summary
research & goals

spaces, such as a common house or outdoor space allows for planned social interactions. This optimizes relationships built with others.

While investigating several co-housing communities, one of the common design elements was the design solution for vehicular movement and access through the community space. Pedestrian movement is the most prominently used method of transportation. Vehicular access is not primary as it is in most neighborhoods we see today. Pedestrian streets allow for interactions with other residents of the community. "Circulation holds it all together; movement through the building is an important design factor" (Huxtable, 1997).

The final research path was defining how the balance and circulation of spaces, both public and private, are both important design features which need to be incorporated into the final community design.

Co-housing is one way to share responsibility and moderate the usage of energy, goods, or transportation as a whole. Every person's individual consumption must regard the long-term effects on the future of humankind. As architects, we need to develop solutions to conserve and utilize what the earth has to offer. Sustainable design is the answer. "By working together and combining their resources, collaborative housing residents share the advantages of a private home and the convenience of shared services and amenities" (Fromm, 1991).

case studies

1. arcosanti
2. newberry place
3. saettedammen

arcosanti

Paolo Soleri

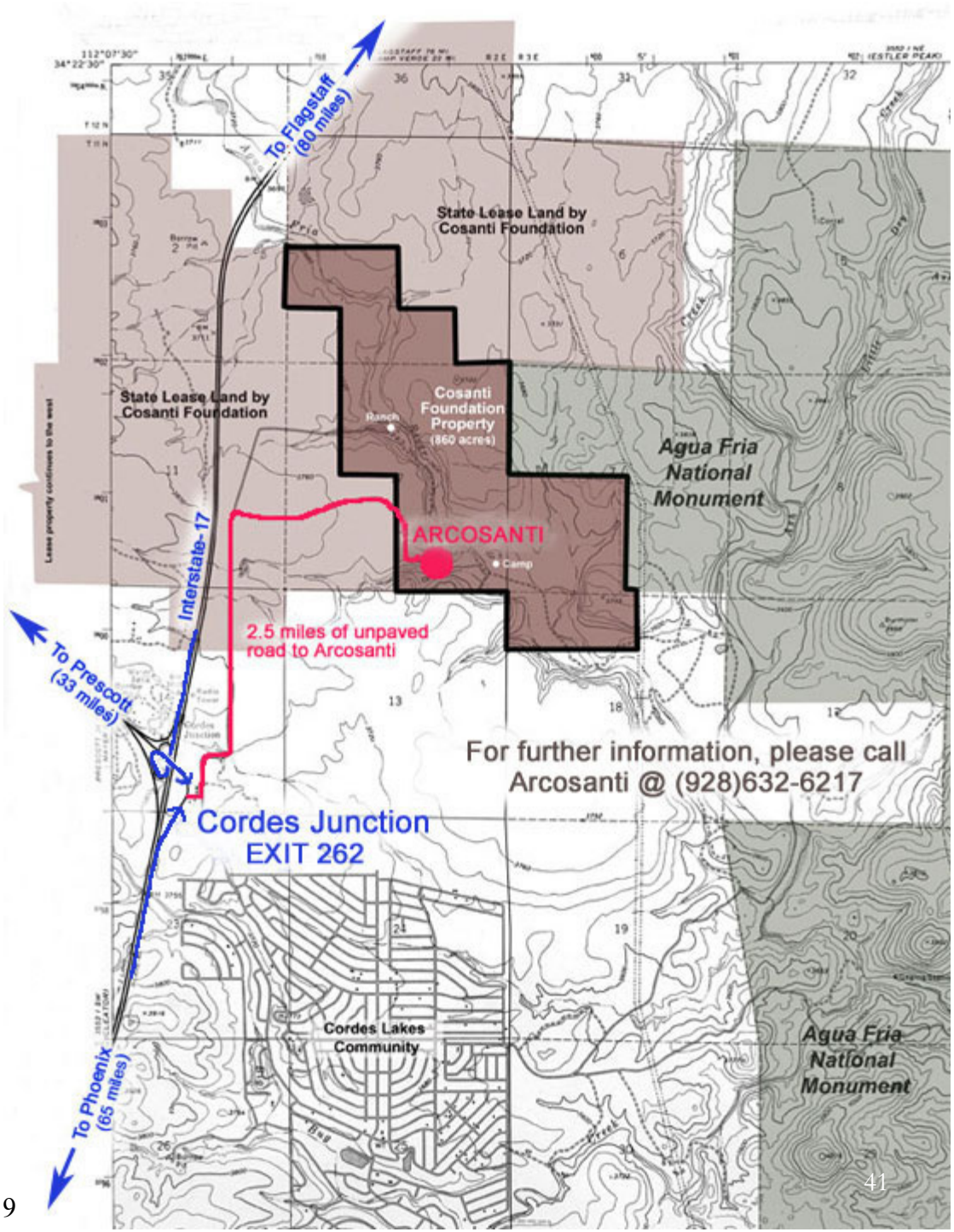
project type: a sustainable community of people who live, work, and play within their own neighborhood

location: approximately seventy miles north of metropolitan Phoenix, Arizona

size: about 25 acres of land of a 4,060 acre land preserve; the Cosanti Foundation owns 860 of these acres

The Cosanti Foundation was established by Paolo Soleri and his late wife, Colly. They decided to fully incorporate the Cosanti Foundation into their lives. The Cosanti Foundation is a non-profit educational organization promoting the understanding of Soleri's architectural concepts, philosophy, cultural, and arts, all while abiding by the concept of arcology. Since 1970, the Arcosanti project has been the main project of the Cosanti Foundation.

Arcosanti is designed with the idea of **arcology**. Arcology is the combination of **architecture + ecology**; a concept that tries to reduce urban sprawl. Urban sprawl includes the wasteful consumption of land, resources, energy, and time. In an arcology setting, only 2% of the amount of



case study

1. arcosanti

land is needed, compared to a "typical" city. Today nearly sixty percent of the land is used primarirly for roads and automotive services. Arcosanti has the idea to eliminate the automobile and design for the pedestrian by placing living, working, and public spaces within a reasonable walking distance of one another. Arcosanti is a community that is trying to improve urban living. Currently this area houses approximately 100 people, but is designed to one day create homes for about 5,000 people.

"Arcology advocates cities designed to maximize the interaction and accessibility associated with an urban environment; minimize the use of energy, raw materials and land, reducing waste and environmental pollution; and allow interaction with the surrounding natural environment" (Cosanti Foundation, 2005).

The existing project elements found within Arcosanti include the following:

* ceramics apse
* foundry
* east & west housing
* vaults
* lab building
* Colly Soleri Mucix Center
* amphitheater
* sky suite
* east crescent
* Soleri office drafting unit
* swimming pool
* greenhouse guest rooms
* crafts III

case study

1. arcosanti


10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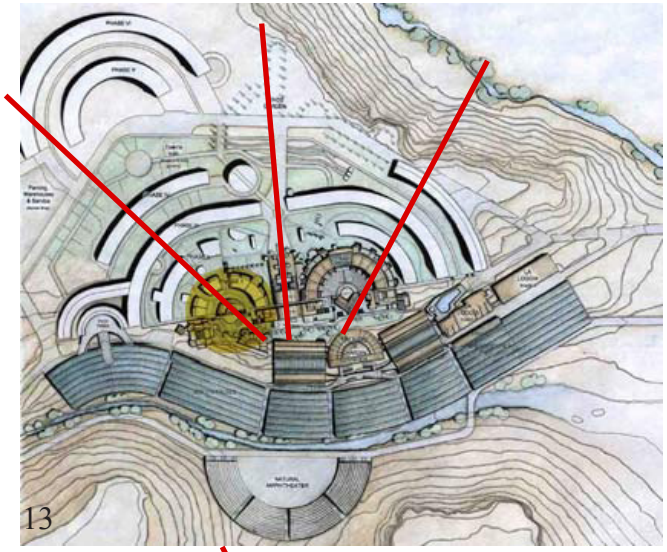
Arizona is an excellent area for utilizing solar gain. In Arcosanti they are using solar greenhouses which are designed accordingly following the arcology concepts. These greenhouses are the homes to fresh produce used in meals for the restaurant as well as for the residents. There is a variety of crops planted to create a continuous harvest (Cosanti Foundation, 2005).

Arcosanti has a great understanding of the use of the land. The small amount they have built upon is an excellent example that even an urban area can be built without destroying too much of the surrounding natural environment. Arcosanti promotes people's interactions with one another by creating a pedestrian-friendly neighborhood. They have incorporated many cultural elements and events within the educational centers and public areas.

The layouts of the buildings are planned in such a manner that they utilize the land as well as creating a cohesive place from multiple buildings. There is not a defining geometry, but rather a more organic feel to what once was a geometric shape. There are some places which have circles or straight edges, but for the majority of Arcosanti it is filled with organic forms. There is a radial form as you can see in the drawings of the section and site plan. The curvilinear form is supported by the internal radial structure.

Spatially, Arcosanti has a beautiful design. The fluid movement optimizes social interactions with others while rewarding the pedestrian with amazing views of not only Arcosanti, but the surrounding dessert area. Natural light is utilized in interior spaces and is utilized in many manners. The most obvious manner is the greenhouse.

Arcosanti shows how collaboration and community come together to form something beautiful and meaningful.



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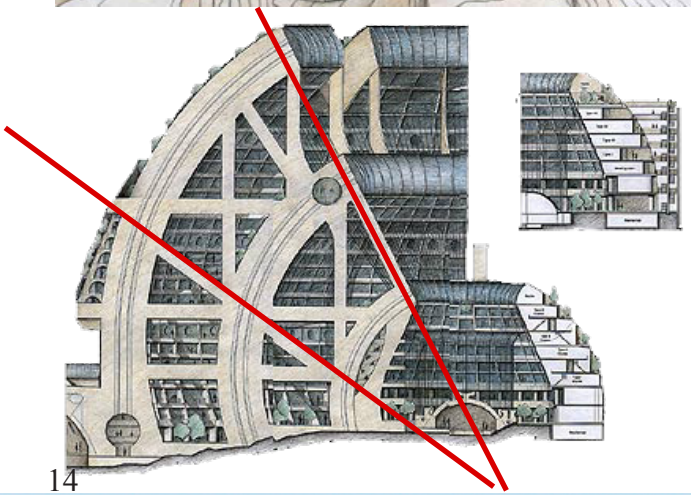

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case study

1. arcosanti

newberry place

DeStigter-Smith Architects

project type: co-housing community

location: Grand Rapids, Michigan

size: 1.1 acres

In 2002 in Grand Rapids, Michigan, a co-housing community called Newberry Place was formed. This neighborhood, or as they like to call it "urban village," consists of multiple elements. These elements include the following:

* 20 homes
* 35 members
* common house -- group owned & managed
  *3,600 square feet
* 2-5 shared meals each week
* grounds
* play area

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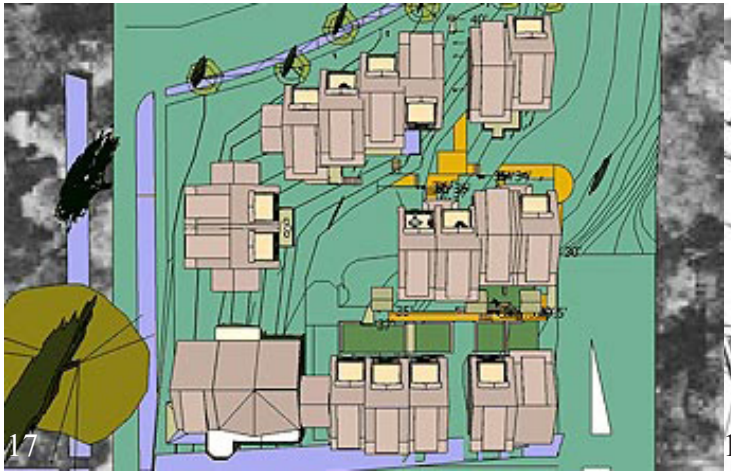
case study

2. newberry place



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Newberry Place broke ground in November 2006 and people began to move into the community in August of 2007. The members of Newberry Place believe that "people who have connections to others within a community live richer and more fulfilling lives, and [we] decided to build a community based on that ideal" (Hoekstra).

With its clustered design, it intentionally promotes strong social relationships to form among all of the neighbors. It also allows for both publicly shared as well as private green spaces. This pedestrian oriented community does not focus on the automobile, but rather the movement and interaction of others who surround them. This is a common element incorporated in many co-housing communities.

While making the community a more inviting and friendlier place for people, the environment needs to also be welcoming and respected. According to Newberry Place's website www.newberryplace.org, the homes have numerous green and sustainable features. These features include:

* solar water heaters
* foam and cellulose insulation
* natural ventilation systems
* passive solar heating
* bamboo and linoleum flooring
* recycled fiber carpet
* on site recycling and compost bins
* Energy Star appliances


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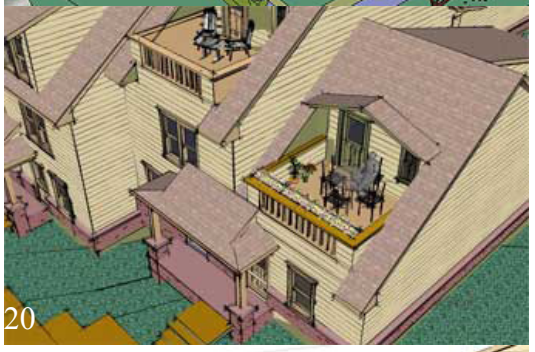
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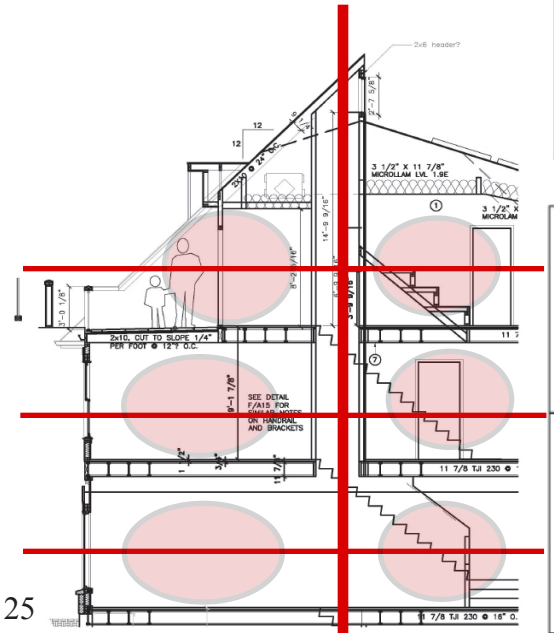
24

case study
2. newberry place

In an energy audit conducted in 2008, the "average heating bill of a Newberry Place home will be fifty to sixty percent less than a federal Energy Star-rated home!" (Hoekstra).

Newberry Place has a very linear method of design. This allows an easy transition from the public space to the private space. Since most people who are invited into your home are not typically invited into your private and personal spaces, the interior has been designed to separate those spaces from one another. The interior is divided into different sections of living. The first level is the public living areas. Your neighbors will more than likely be a guest in these few spaces. These are the most public spaces found inside the homes. The second level begins the private space; the bedrooms are found on this level. The top floor also has bedroom space. As you can see in the section, there is an outdoor patio on the homes that can overlook the community.

Newberry Place has a smart design both found on the interior of the homes as well as the community design. It is open and welcoming; people are friendly and are active within their community.



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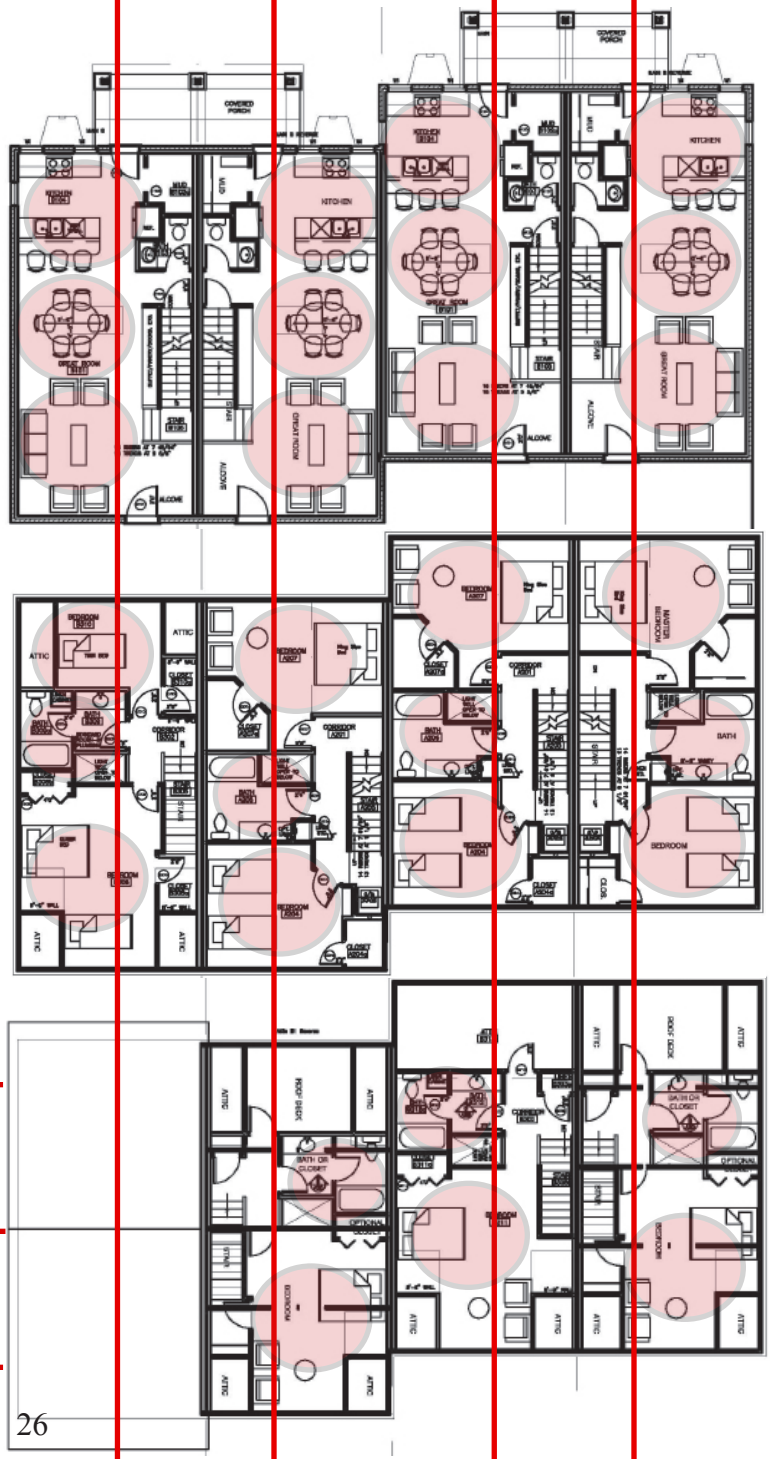

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case study

2. newberry place

saettedammen

Theo Bjerg og Palle Dyrebord

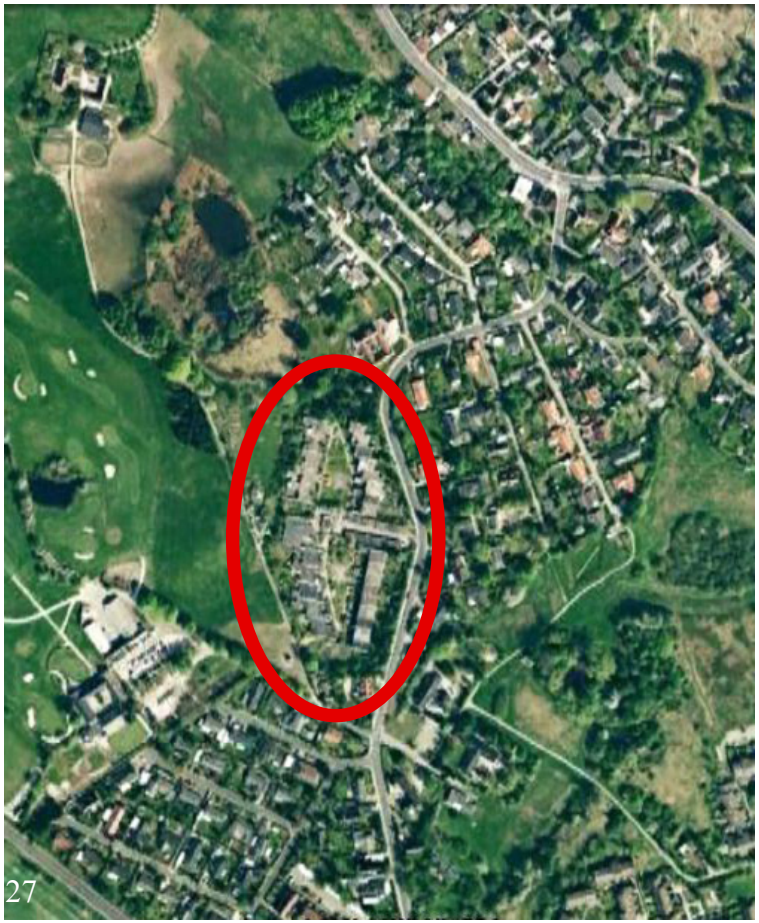
project type: a collaborative co-housing community

location: Hilleroed, Denmark

size: about 4 city blocks

Saettedammen is located in New Hammersholt, about 3 miles south of Hillerød, Denmark. It was one of the first of ninety co-housing communities. Saettedammen blends itself within the boundaries of "typical" neighborhoods found within cities. This community is very contradicting to the surrounding neighborhoods; look at the different design choices made in the photograph on the right. As you can see, Saettedammen has a centralized community focus. The housing units share partial or full walls in an orderly clustered manner. The space created by clustering the housing units allow for a beautiful open public space to be shared with all of the people who reside here.

There are no other communities that show anything other than single-family homes with their own front and back yard. These homes are very close in proximity, yet so desolate in the manner of neighborhood design.



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case study

3. saettedammen

This is a community that works. The children play and the adults have conversations; all are welcome, relaxed, and calm.

"Here was something that Americans – and not just architects and planners – were talking of creating yet never seemed to get off the ground. In collaborative communities, such as Saettedammen, the residents plan and manage housing. They maintain a balance between privacy and community through individual dwellings and a well-used common house. Although there have always been a number of intentional communities in the United States – sharing a common purpose of personal, religious, or social change – they are usually rural, and many attempt to escape from society or be self-sufficient. But Saettedammen was planned by residents who are very much a part of society – teachers, administrators, and social workers were among the original group. The autonomy of the private household was central to their planning" (Fromm, 1991).

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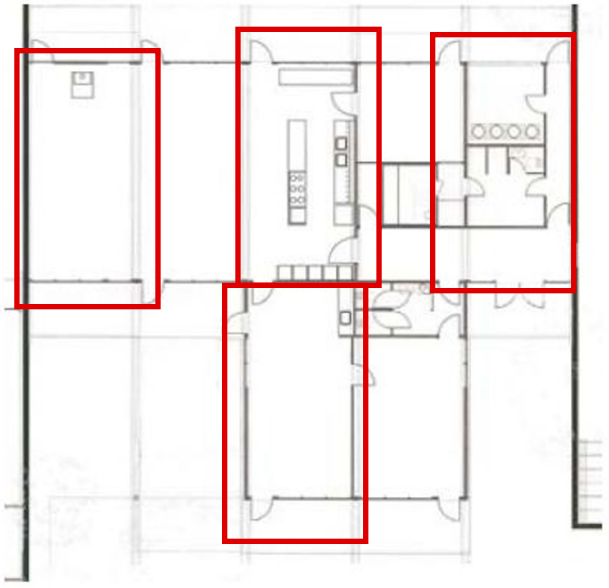
Similar to the surrounding neighborhoods, there is a sense of a grid pattern. The surrounding neighborhoods are positioned equally on a grid to include a front and back yard with the up-to-code standards of spacing between each home. The grid pattern found within Saettedammen is more obvious in the floor plan. The same rectilinear shape and size is repeated within the adjacent space. The arrangement of the homes creates a beautiful courtyard-like common space for the residents to enjoy. This open space is a semi-private area; it is public to the residents, but private to other neighborhoods.

The repetitive form would become redundant in any other neighborhood, such as any area that surrounds Saettedammen. It does not bore the eye since there is a staggering pattern to the community design. This staggering allows for small "pockets" to naturally form. Also, it allows the centralized open space to have a more diverse and welcoming feel.



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case study

3. saettedammen

case study
summary

The three previous case studies are all excellent examples of how communities work together. The shared public facilities balance in a harmonious manner to the private spaces. There is a large range of sizes for co-housing communities. By using different sizes of communities found in very different locations, this helped broaden the options for future variations of co-housing communities. It helped to understand that there are many alterations in sizes and number of participants; this shows how people really do effect others and develop relationships.

While diving in deeper research about Arcosanti, Newberry Place, and Saettedammen, the theoretical premise / unifying idea was always a part of the process.

theoretical premise / unifying idea:

Those who surround us have a major effect on who we become. These relationships aid in our development, growth, and overall well-being as individuals.

The theoretical premise / unifying idea did not change. If anything it grew stronger the more knowledge that was uncovered and discovered. These three communities showed how people can work together as a whole unit and make strong relationships and bonds with one another.

case study
summary

The spatial configurations of the three case studies had similarities among them. The orientation was centralized; the focus was the community. This centralized area allowed for pedestrian movement while the vehicular traffic was designed around the perimeter. By creating a pedestrian-only area, it becomes a much safer and more used space.

The designs of the homes located on these sites also shared similar features. The main floor had the more public spaces – kitchen, dining, and living areas – where one could feel comfortable inviting people into the homes. The more private spaces like the bedrooms were located on a different floor. During the research process, there were single story homes found. The difference was the bedrooms were generally located in the back of the homes whereas the more public spaces were located in the front. This still allowed for that public to private transition.

Overall, the most beneficial observation was realizing that co-housing communities are able to function extremely well regardless of the size. These case studies were great examples of what really does work. They provided excellent, personal reviews of the residents and their thoughts on their own community. The people seemed happy, calm, and they really show appreciation not only for where they live, but for the environment as well.

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Forum building built in 1926.

32

Forum building with two additional floors added in 1938.

historical context

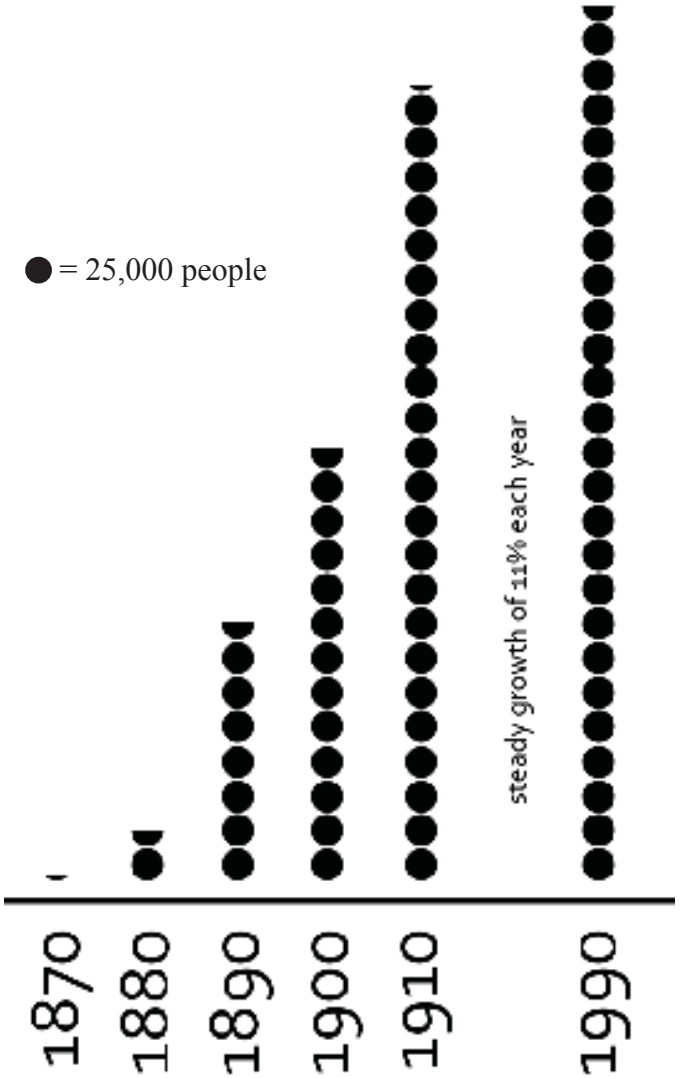
Fargo background

history of Fargo:

Fargo, ND, and Moorhead, MN, were beginning to become settled in July of 1858. The first settlers were approximately eight miles south of today's Moorhead. Soon, more settlers began to move toward the Red River Valley, settling just around the present day Fargo-Moorhead area. In 1858 the first farm – which was approximately fifty acres large – was established in the Red River Valley. This was quite large since there was an estimated amount of 100 acres being used as farmland in North Dakota in 1870. This area was becoming settled due to its easy access of travel via river transportation.

A post office was established in a small town called Centralia on October 6, 1871. Centralia was later renamed Fargo after William G. Fargo – a man who was a director and financial backer of the railroad, as well as a partner in the company Wells-Fargo Express. The United States Post Office made the official name change of Centralia on February 14, 1872 to Fargo.

Fargo, like any other town, had a newspaper for daily or weekly news. There were many different names and ownership roles between the 1870s until today. The history of Fargo's many newspaper mergers can be traced back to 1873 when it was under the name of Fargo Express – named by William G. Fargo of the Wells Fargo Express Company. The first newspaper published as the Fargo Forum was on November 17, 1891. Three years later, the Fargo Forum merged and was renamed the Fargo Forum and Daily Republican and remained



historical context

under this name for sixty-three years. In 1966 the Fargo Forum changed names once again. It was called The Forum of Fargo-Moorhead. Twenty-seven years later it was once more renamed to the Forum Communications Company. Finally, in 1996 a web-enabled newspaper was known as IN-FORUM (Caron).

Fargo became the area to settle due to its relation to the Red River. The Red River Valley is extremely fertile and crops gain a very high yield. This is due to the amounts of nutrients coming out of the Red River. Fargo became populated

More and more people began moving to Fargo after realizing the fertile land. In all of the Dakota Territory there were 1,720 farms in 1870. In only ten years it grew about ten times the amount of farms. By 1910 there were 74,360 farms in North Dakota. This has been around the average number of North Dakotan farms ever since. Now there is a slight, yet continuous, decline of farms in North Dakota which began in 1950.

Before the railroad system crossed North Dakota there were only around 2,400 people living in this area of the Midwest. Once the railroad had arrived only ten years later the population grew to nearly 37,000 people. Over half of the growth was in the areas of current day Grand Forks and Fargo. The populations of these areas were booming. Numbers kept rising until leveling out around 1910 to a relatively steady growth of eleven percent each year (Caron).

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historical context

history of co-housing:

Co-housing began in the 1970's in Denmark. It did not start to form in the United States until the mid-1980s. This new form of group living creates a solid sense of community both physically as well as socially. This method of living with others in a close-knit community is a way to develop relationships, grow emotionally, and create a sense of belonging to a group of people.

It all began when a group of environmentally-aware friends decided they wanted to create a more earth-friendly way of living. Typically a co-housing community has residents who want to actively participate with their neighbors to make a better community; everyone's best interests are taken into consideration. Co-housing communities have more responsibilities than most neighborhoods have. The residents usually own and maintain all elements found within their community.

In Danish, the word bofællesskaber translates into co-housing (Lehrskov-Schmidt). Bofællesskaber communities began and have been thriving ever since. The communal activities, meals, and social connections within the neighborhood make the residents feel more comfortable, calm, and responsible.

historical context

Many people think co-housing may be too group-oriented and that there is no privacy, but that is untrue. People within co-housing communities have the same benefits as people who own their own home, apartment, condo, etc., but the difference is that co-housing members also have a public gathering space that single home residents do not have. This space, usually known as the common house, is used for many functions and for all ages. It has a variety of spaces and multiple uses. The most prominent feature of the common house is that it has a full kitchen and dining area for community meals. The residents of the community decide how many group meals they would like to share each week; most range from two to five meals per week.

history of energy conservation:

Energy conservation is a major part of society's concerns. Civilization runs on energy. Energy resources are running low. Why not collaborate ideas and try to find different and better ways to conserve energy?

The oldest form of energy is fire. Fire has been used for cooking, baking pottery, a heat source, and many more items. This type of energy is really difficult to gather, but it has and can be done.

historical context

In comparison to fire, wind is the oldest form of mechanical energy. The oldest, most recognizable form is the ship. Ship propulsion became a crucial factor in society, due to the exploration of the world and the movement of goods. Wind has been used on land too. The Dutch used a wind machine to pump water and to grind grains. This proved to be difficult since the wind is unpredictable and irregular.

In the 18th century, steam was a revolutionary development. It was unique; it could do work on land or in water. The negative factor is that steam machinery – or anything with an engine – also required a fuel source. This caused fuel costs to increase dramatically. New fuel sources were being discovered. Coinciding with that was the fact that machinery was becoming easier to produce. This was purely coincidence.

During the 19th century, steam machines made the excavation of coal mining very productive. The internal combustion engine became developed requiring petroleum; a steam engine's primary fuel source. Finally electrical power – specifically as a light source – was discovered.

The 20th century brought the automobile, along with many other new inventions. Energy consumption soared. Wind, a free energy source which at one point "fueled" ships, was replaced with costly fuel.

historical context

The 1973 “energy crisis” introduced the need for a dramatic change in energy consumption. The realization that energy sources being used are not producing – or cannot produce – enough energy to stay replenished with the amount being used at such a rapid pace. There are very important differences between the era energy was discovered and the early eras of energy conservation (See Appendix C).

Energy conservation has been one of the most concerned topics in recent years. The energy sources are depleting, and alternative, environmentally friendly alternatives need to continue being produced. Most commercial buildings, such as hospitals or steel mills, pay millions of dollars each year on energy. These large quantities of energy consumption are hurting the environment. Fossil fuels release carbon dioxide into the atmosphere, the ozone layer is being destroyed, and the greenhouse effect is being accelerated (Wulfinghoff). This issue needs to slow down and eventually stop in order for the environment to find its balance once again.

The act of new discovery and new development to create something which is better than the previous was, and still is, the trend. People are constantly trying to find or design the greatest, most efficient product. This act of conservation needs to be incorporated into everyday life. Simple factors to reduce energy use can be as large as utilizing natural light during the day or as small as turning the light switch off when you leave the room.

goals for thesis

1. to generate a unique and thoughtful theoretical premise / unifying idea that is part of a social issue which needs to be further investigated.

2. to inspire future research and experimentation of co-housing communities.

3. to reach a greater understanding of research methods involved with the statement of intent and the proposal to reach a meaningful solution.

4. to set my schedule at a challenging, yet reasonable pace that allows me to complete and understand all elements of the design.

5. to increase my understanding of building construction including mechanical systems, different construction methods, etc. and incorporating them into the final design.

6. to provide extensive and clear documentation of the design process and show how it is related to the original idea of the theoretical premise / unifying idea which will be useful for future scholars or researchers.

goals for thesis

7. to create a design which evokes emotion and embraces social needs of an ever-changing society directed toward the future of residential design.

8. to produce an excellent final design both graphically as well as physically in order to provide understanding through visual means. The final presentation will include drawings, details, models, and ideas to the greatest of my abilities.

9. to produce a clear, professional, and concise compilation of research, documentation, and design. This will be of value for future scholars or researchers.

10. to demonstrate my skills as an architecture student at a professional-level exhibition of my design that will be used to market myself to potential and future career opportunities.

11. to create a sustainable community with homes -- not houses. This should be a place where people want to live.

site analysis
narrative

While traveling to the site to observe, absorb, and analyze, I realized how much it felt like home. The quality of the country had a sense of welcoming and warmth that I remember as a child. My mind began to wander to past memories; how much fun I used to have running and playing outside. That was when I realized this was the perfect destination for a co-housing community.

The more time I spent at the site, my senses became stronger. The snow was crunching beneath my boots as I was kicking up a little dirt from the road. Piles of grass, dirt, and gravel were along the side of the road from the maintainer. The crisp, cold air smelled so clean. The almost silent sounds were a nice relaxing change from the constant hum of city traffic. The occasional vehicle drove past, but that did not ruin the quiet.

I thought of my original ideas of community and relationships. I pictured the residents of the co-housing community as well as the families who live at the nearby farms. I saw friendships forming. I saw socialization. I saw an overall well-being.

site analysis
narrative

I imagined the area surrounded by fields of lush green crops; what a perfect setting for a co-housing community. I imagined children running and playing in a very similar fashion to my own childhood. I heard laughter, bicycle tires skidding on the dirt road, and dogs barking. This serene feeling lasted the extent of my visit.

This site captures amazing views. Since the landscape of the area is so flat, I was able to see for a great distance. I observed the surrounding homes. They seemed to fit within their surroundings, but it felt somewhat forced; the built structures were thought of first and the landscape second. That forced feeling is what I plan to avert in this co-housing design.

As I walked the half mile back toward my vehicle parked near the main road, I turned back to the site and envisioned this co-housing community. It was subtle, fluid, and tranquil. There was a sense of belief and understanding about the environment. The built and the natural environments were integrated and cohesive.

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35

site analysis

qualitative

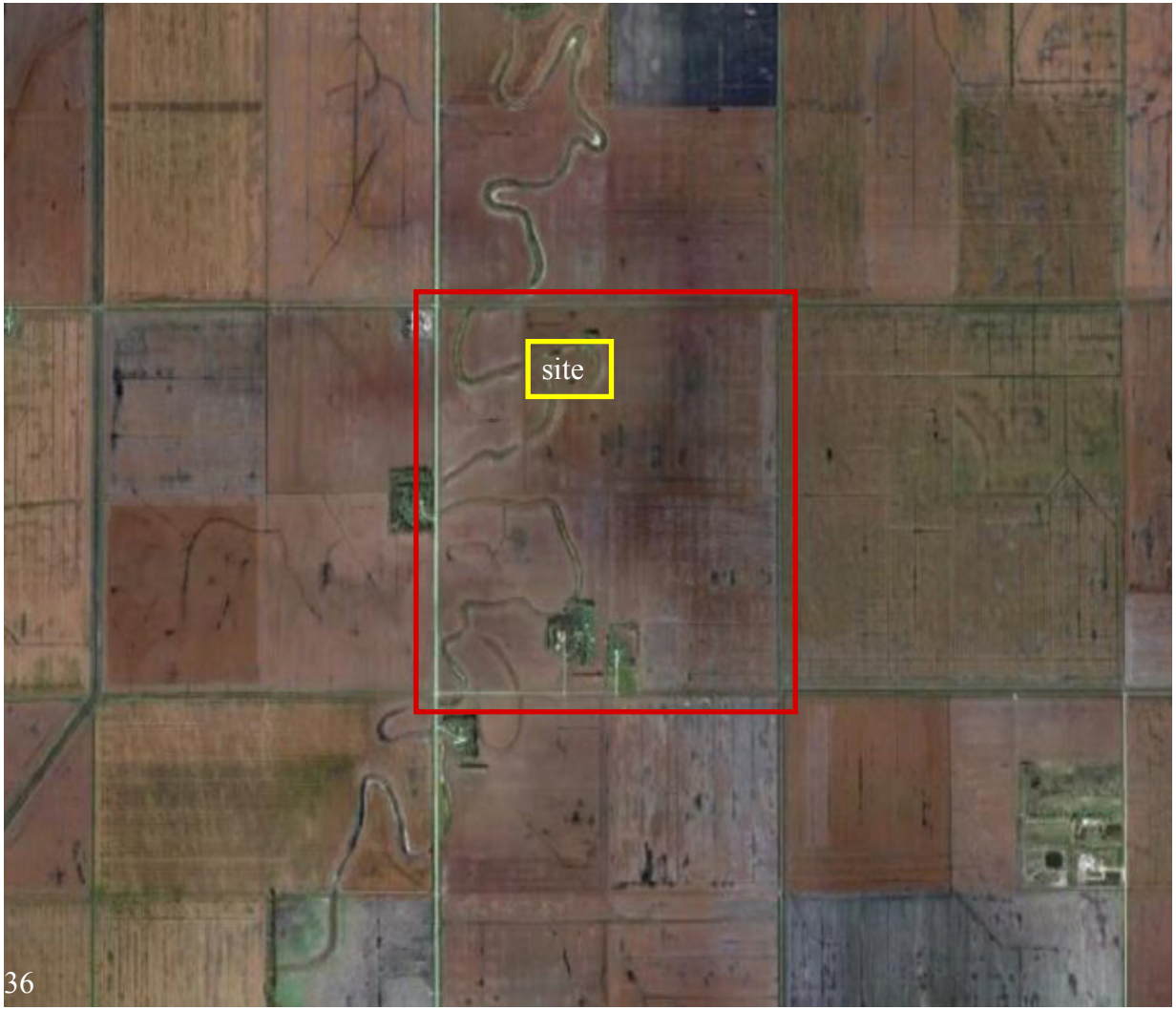
views and vistas:

Eastern North Dakota is well known for its flat topography. At this site you can see for great distances in any direction. It is somewhat centralized among the cities of Horace, Mapleton, and Kindred (all in North Dakota). It is located in the Warren township along County Road 15 (165th Avenue South East) and 42nd Street South East. There are five single-family farms that can be seen from around the site; only two are in close proximity to the chosen site.

This area is currently being used as a field to grow and harvest crops. Going through this area is water that acts similarly to a river by looks alone, however, this water does not run; it is stagnant water. There are cattails along with other wild prairie grasses along the water's edge.

There are many different textures to be found on this site. These textures are visible seasonally, but the obvious ones that would be seen are gravel, soil, crops, trees, grass along the edge of the field and road, grass and cattails found around the perimeter of stagnant water.

There is a prominent grid system which is broken up by this wonderful organic river-like stream. This creates a hassle for the farmer, but does add nice variation to a viewer of the area. Even though it is not a running river, it still can be beautiful. This water is probably going



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to stay on this site forever, unless there are years of drought, or someone builds up the landscape, neither of which will likely occur.

The site is a field, which is surrounded by other fields. There is a grid system present. Looking at aerial photographs you can clearly see these grids which are one mile by one mile in size. Each square mile is divided into four sections and each section is a different field, as you can see on the photograph on the left.

vegetation:

Trees are generally located around the farms used as shelterbelts to block some of the wind and as landscaping design elements. There is one tree cluster found in the field. It is located alongside the water. The trees here are mostly deciduous, but there are some conifers surrounding the farms.

wind:

At the time of the site visit, there was not a notable amount of wind, but this flat landscape really does allow the wind to blow. Since the existing farms have large shelterbelts surrounding their homes, this shows that the residents are changing the flow of the wind.

site analysis
qualitative

light quality:

This is a relatively open to the elements area. The light quality was bright, but this can change depending on the time of the year. During the fall when farmers are harvesting their crops, there is a hazy quality; this is due to the dust and particles tossed into the air from the harvesting process. During other times of the year the sunlight is still producing a generous amount of bright, clear light.


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38


39

existing built features:

Around the site are five single-family homes. The trees and other vegetation surrounding the farms were planted by people to protect their land from high winds. This is obvious since the plants are in an orderly row just surrounding the farms. There are also roads built with concrete, gravel, or dirt. Dependent on how much travel is on each road, determines what each road is made with which material.

human characteristics:

People are present at the site. This is where they live, where some work, or where other travel to or from. This is right off of a county road so it is an easy commute for those who live in the area to travel to Fargo or any other city.


40

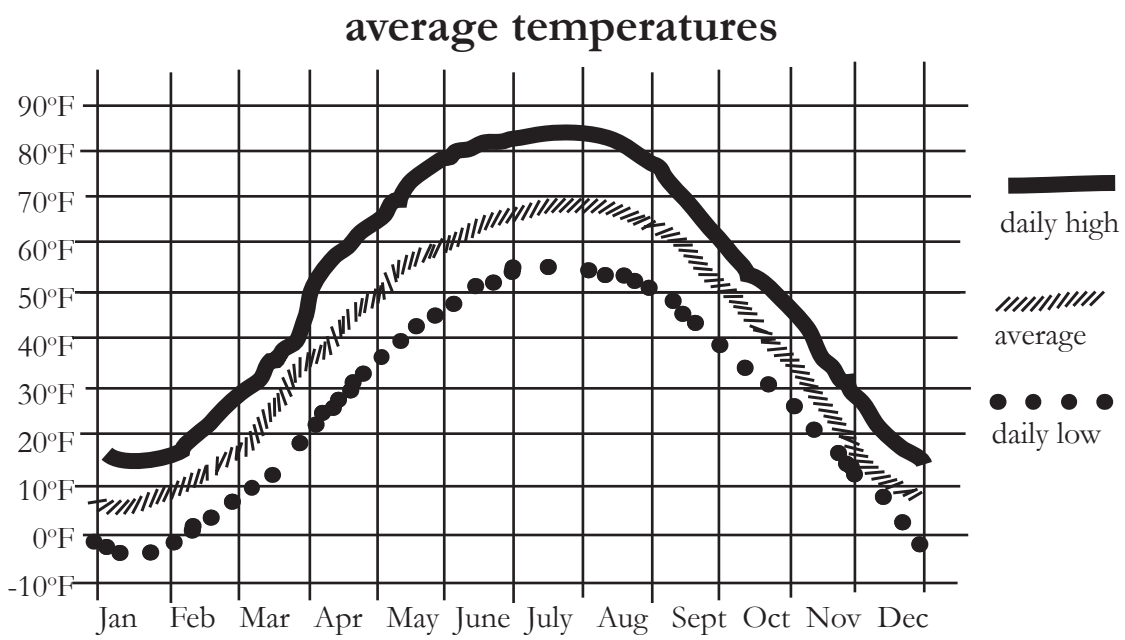
site analysis
qualitative

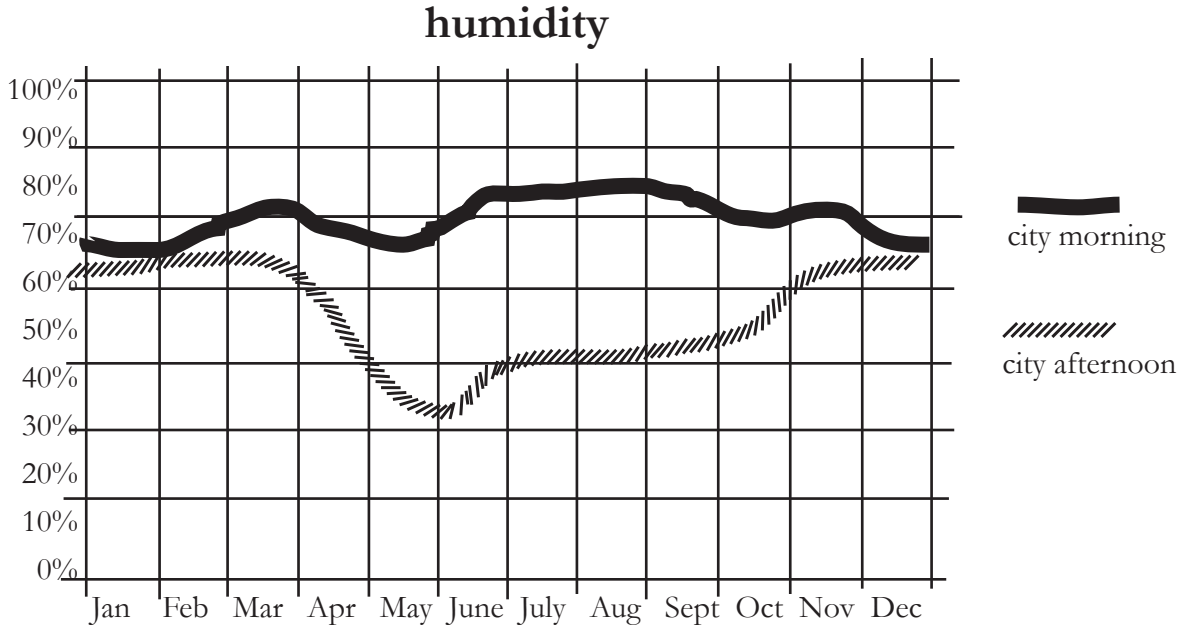
distress:

There is some distress on the site, but it is on a micro scale; not easily visible. This distress includes the loss of topsoil to wind, slight changes in the topography due to the rising or falling amounts of water located in the field, as well as the changes made by the farmer who drives on the site, plants crops, sprays the field, harvests, and tills the field. All of these factors play a role on the existing land.

climate data:

The climate of this area can be classified as humid continental. There are much greater variations in the temperature than any other climates. This is visible in the temperature graph on the right.



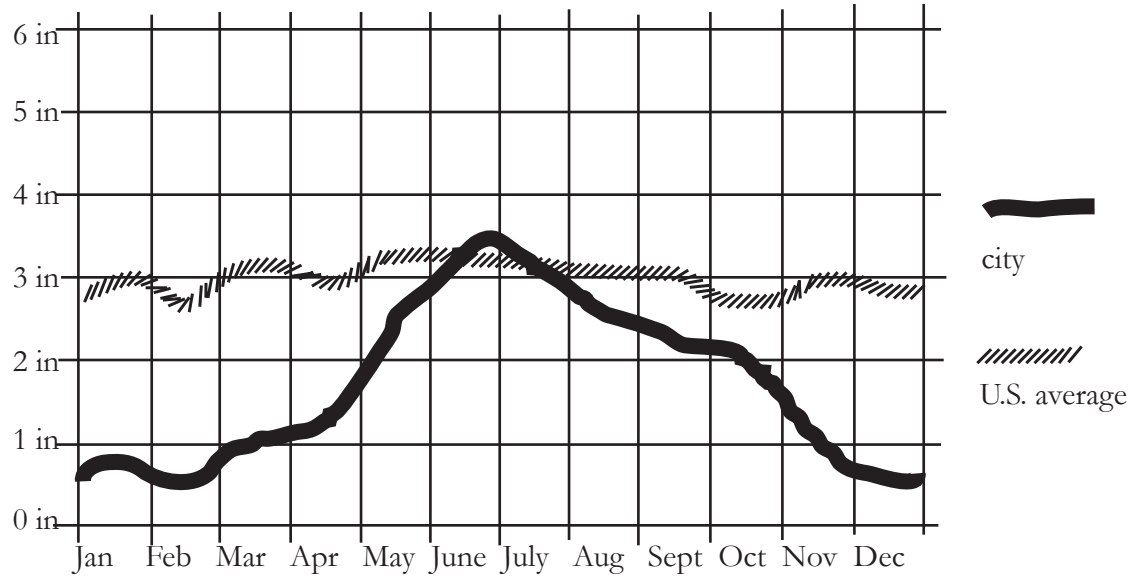


site analysis
quantitative

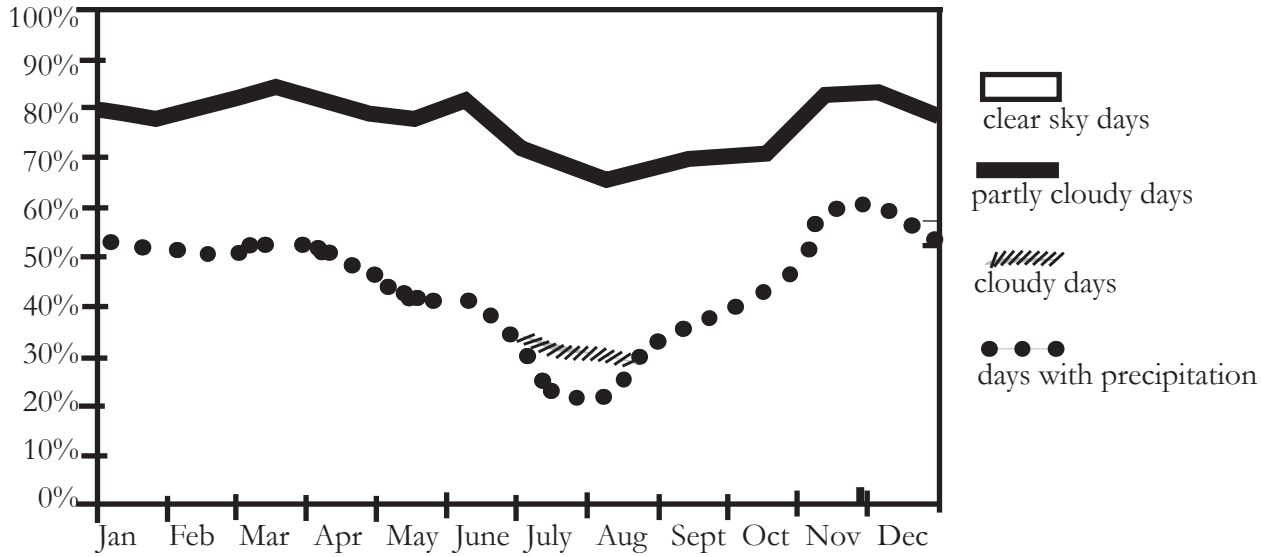
site analysis

quantitative

precipitation

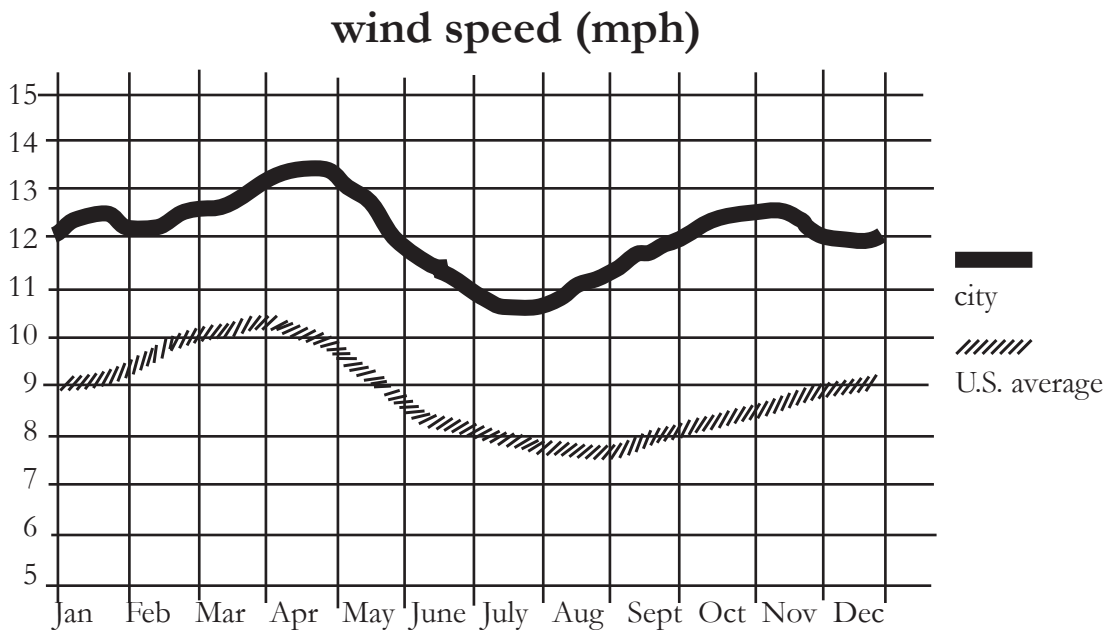


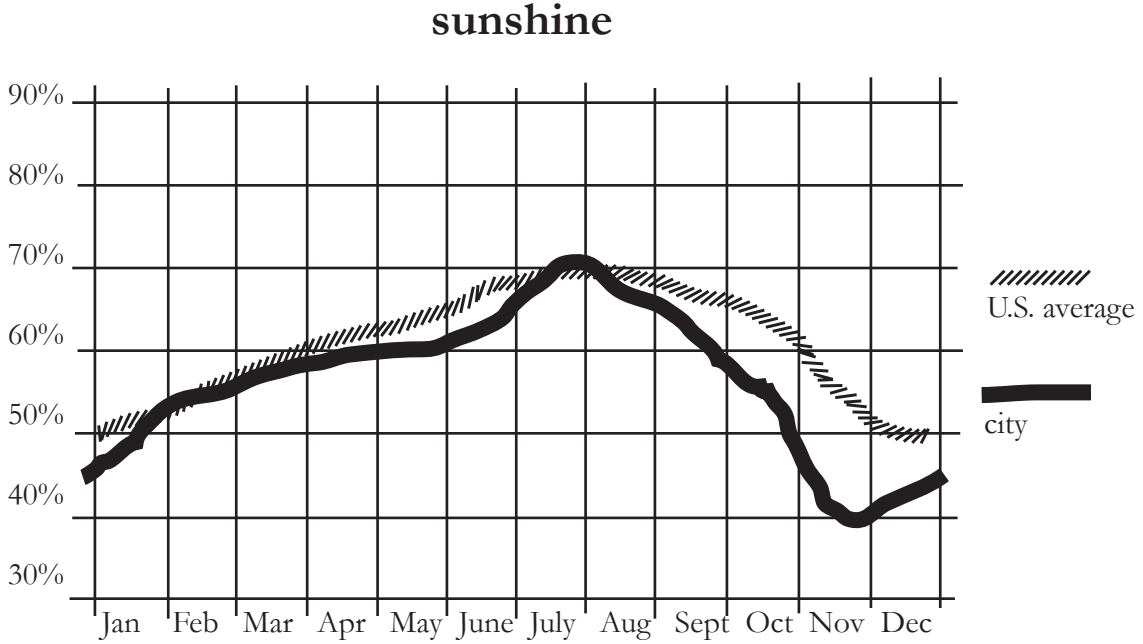
cloud coverage in days

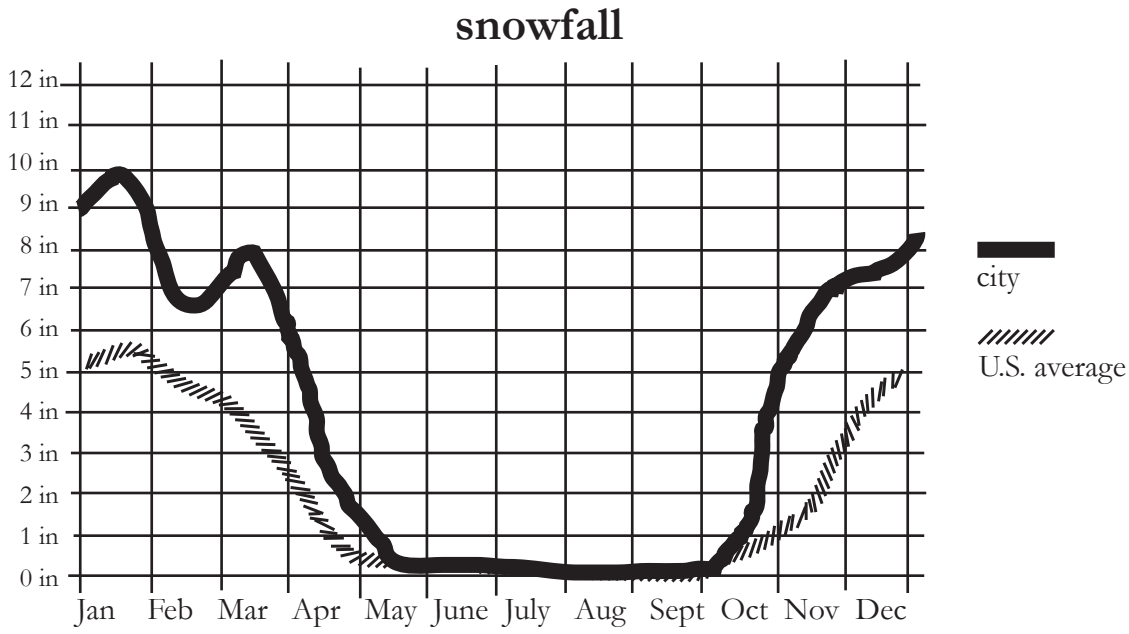


site analysis

quantitative







site analysis

quantitative

soils:

There are three different soil types found on the web soil survey site (Stautz, W. L.).

Fargo silty clay, 0 to 1% slopes: "The Fargo series consists of very deep, poorly drained and very poorly drained, slowly permeable soils that formed in calcareous, clayey lacustrine sediments. These soils are on glacial lake plains, floodplains, and gently sloping side slopes of streams within glacial lake plains. Slopes range from 0 to 6 percent. Mean annual air temperature is 42 degrees F, and mean annual precipitation is 19 inches."

Dovray silty clay, 0 to 1% slopes: "The Dovray series consists of deep poorly and very poorly drained soil that formed in clayey glacial lacustrine sediments or till on glacial lake plains and moraines. These soils have slow and very slow permeability. They have slopes of 0 to 2 percent. Mean annual precipitation is about 22 inches, and mean annual temperature is about 44 degrees F."

Overly-Bearden silt loam, 1 to 2% slopes: "The Overly series consists of very deep, well drained or moderately well drained soils that formed in calcareous sediments. Permeability is moderately slow in the upper part and moderately slow or slow in the substratum. These soils are on glacial lake plains and terraces on valley side slopes. Slope ranges from 0 to 15 percent. Mean annual air temperature is 39 degrees F, and mean annual precipitation is 18 inches."

utilities:

electricity: There is presently an overhead electrical distribution line approximately 1,800 feet away from the site on the corner of County Road 15 and 42nd Street South East. Cass County Electric Cooperative determined the requirements for electrical service at the site. Based on a span length of approximately 200 feet between distribution poles, which is consistent with the spans of the existing poles, the electrical utility would require installation of nine new poles, a separate revenue meter for each home, as well as an array of underground distribution transformers and fuses.

An option that will be considered as an attempt to introduce an efficient source of alternative energy to the community is incorporating a single wind turbine generator (WTG) to provide electricity to the entire community. The WTG will be sized to sustain peak loading requirements when the generator is running at full capacity. Electricity that is generated by the WTG that is not used by the members of the community will be sold back to the electrical utility.

site analysis
quantitative

site analysis
quantitative

An option that will be considered in order to increase electricity reliability is the use of a backup generator. The backup generator will be controlled by an automatic transfer switch, which will switch to backup power only when both of the primary sources are unavailable. Therefore, the generator will be used only when there is an electrical outage and the wind is not blowing or the WTG is out of service. The fuel source for the backup generator will be liquid propane or natural gas, depending on the availability of natural gas in the area.

heat: Three options will be considered for means of supplying a heat source for the community. An engineering consultant will be utilized to help provide the most logical solution among natural gas, propane, and electricity.

The preferred method of heating homes in the community would be natural gas when considering energy-efficiency. However, the availability of a natural gas source may make this option less appealing. The deciding factor as to whether natural gas heat will be sustainable is the proximity of a natural gas pipeline. Given the fact that some of the homes in the area have propane tanks in their yards, it is reasonable to assume the nearest gas line may be a long distance away.

The second option for heating the community is liquid propane. A community propane tank could be utilized to provide a fuel source for a furnace at every home in the neighborhood. This would be the most ecologically and economically friendly choice for heat. Apparent challenges to be considered with this option include determining how the propane will be purchased by the community and whether the propane supplier is able to bill each home individually.

The third option for heating is electricity. This is initially thought to be the least desirable option when considering energy-efficiency, but may be more appealing when coupled with the use of the community WTG. The more the community can take advantage of the energy generated by the WTG, the less it needs to rely on other methods of energy. Therefore, it may be able to reduce fuel consumption to increase energy-efficiency.

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site analysis

quantitative

traffic (vehicular):

Currently there is not a lot of vehicular traffic on or around the site. However, during the planting, growing, and harvesting season, the traffic conditions change dramatically. County Road 15 has a moderate amount of traffic. Contradicting that is 42nd Street South East. There is very minimal traffic on that road. With the addition of a co-housing community to the area, the traffic patterns would soon change, since the route to the chosen site is on 42nd Street South East.

traffic (pedestrian):

Not very much pedestrian activity is present at the site. There are signs of pedestrian movement on the farms, but any other movement around the area is by vehicular transportation.

slope analysis:

The landscape slope is somewhere between 0% and 2% (Stautz, W. L.). This tells that it is a flat site and is usable for any type of activity.


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site character:

There are signs of erosion, but not in recent years. There is stagnant water located at the site that eroded the landscape; nothing has significantly changed lately. All of the trees look healthy with no signs of dying.

plant cover:

The plants that cover the site are primarily the crop of choice by the farmer, which are generally soybeans or corn. There are trees surrounding the farms with one small tree cluster along the stagnant water. These trees are mostly deciduous trees, but trees found within the shelterbelts surrounding the farm have some coniferous trees too.


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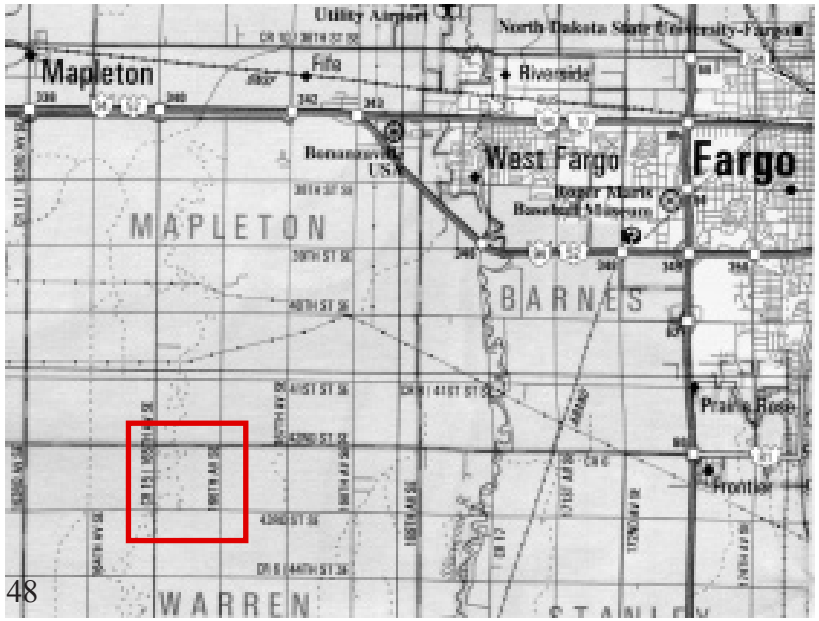
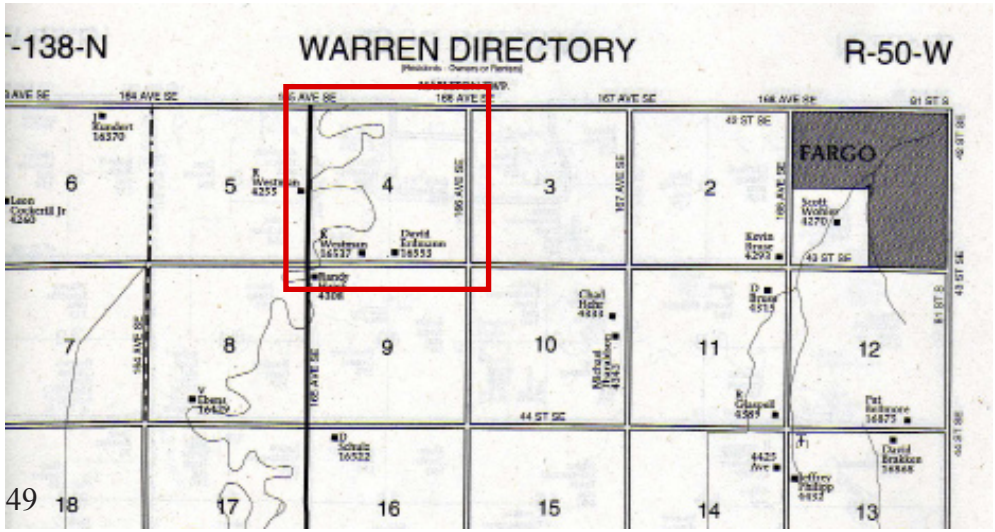
site analysis
quantitative





maps:

The map on the left shows the topography of the area of the site. It has a really flat topography, so it doesn't show much variation, however, it does show the relationship of the site to the cities of Mapleton, Horace, West Fargo, and Fargo, North Dakota

The map above is the area of Warren Township, where the site is located. This map shows where every farm is located and the owner or renter of that property. The site is found on the border of the Warren and Mapleton townships.

site analysis

quantitative

site reconnaissance:

The following images were taken on the site in all four cardinal directions. They show the surrounding areas and views from the site. The borders of the site are clearly defined. The stagnant river-like feature surrounds the site.

site analysis

quantitative

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site analysis

quantitative

programmatic requirements

space allocation:

After researching different co-housing communities, I believe I can create a beautiful, harmonious co-housing community in approximately 11 acres of land. The sizes of the spaces are listed, but are subject to change depending on each individual person's needs.

Private:

Individual homes:

Kitchen	250 ft^2
Dining	315 ft^2
Living	420 ft^2
Bedroom (2 bed)	220 ft^2
(3 bed)	150 ft^2
Restroom	120 ft^2

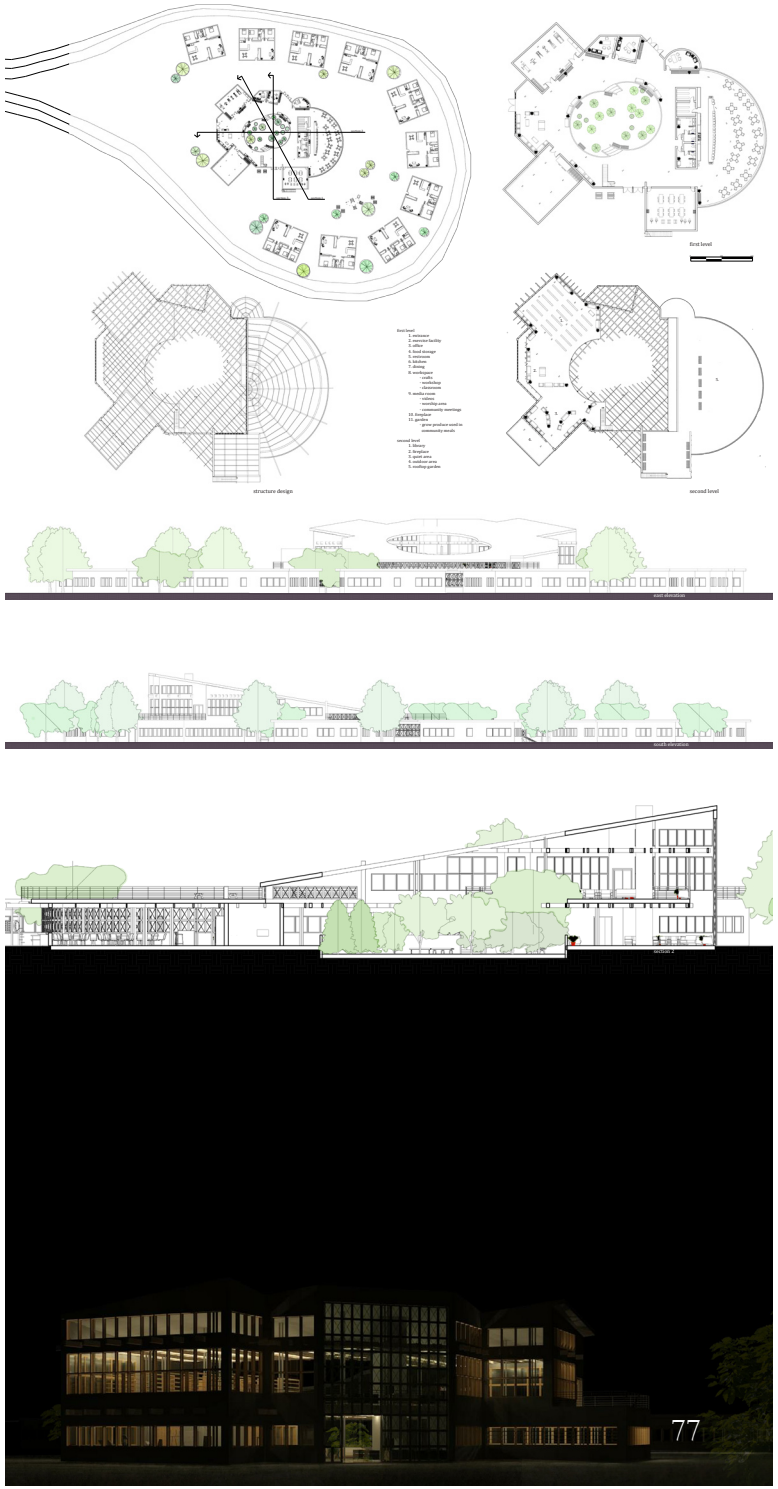
Public:

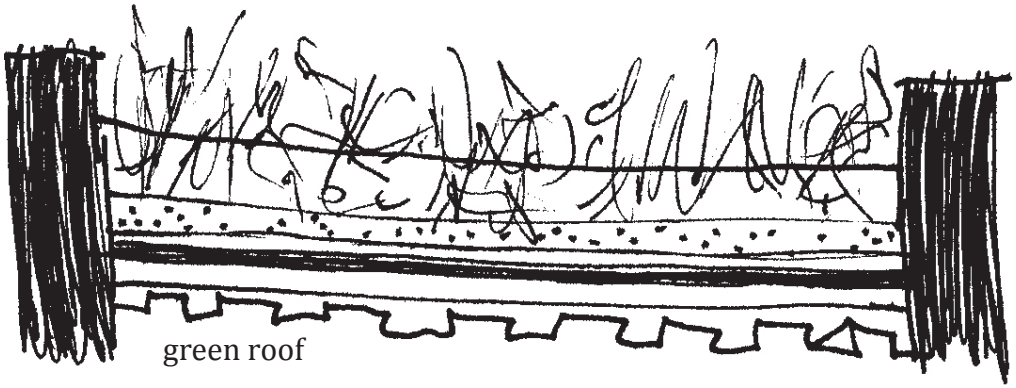
Common house:

Kitchen	700 ft^2
Dining area	2,190 ft^2
Garden	2,085 ft^2
Media room	1,350 ft^2
Craft room	845 ft^2
Library	2,000 ft^2
Offices	745 ft^2
Workout facility	950 ft^2
Fireplace	750 ft^2
Quiet area	1,350 ft^2
Restrooms	600 ft^2
Storage area	600 ft^2

final board layout

final board layout

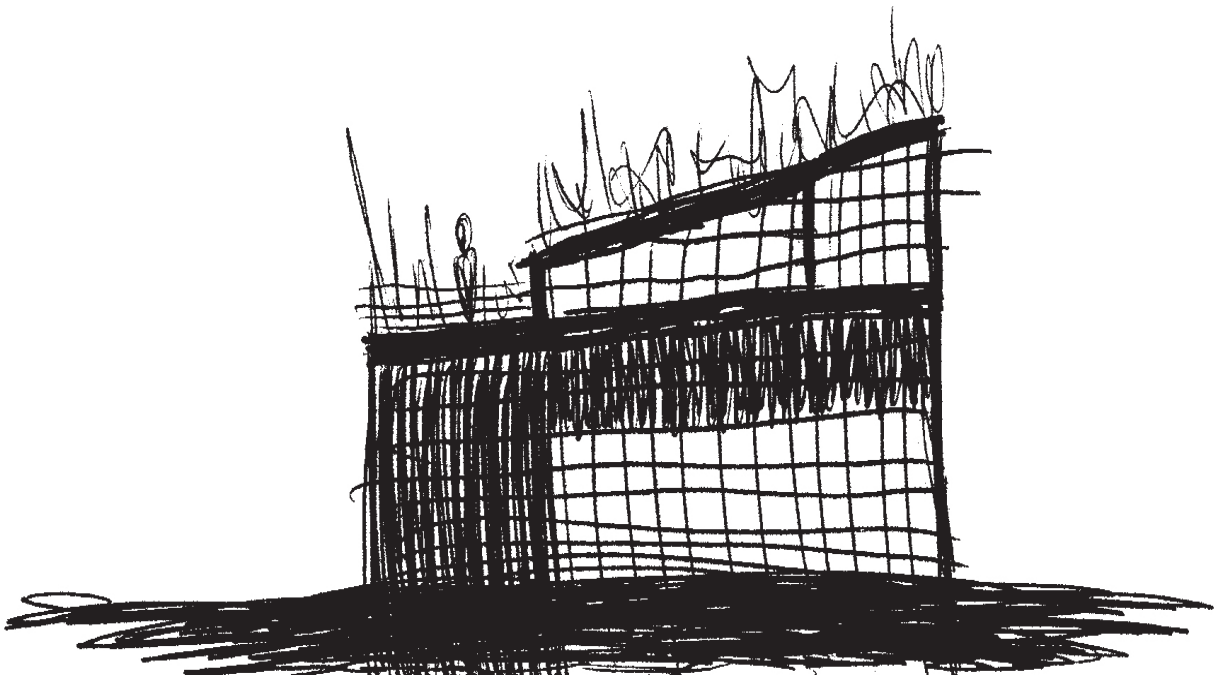


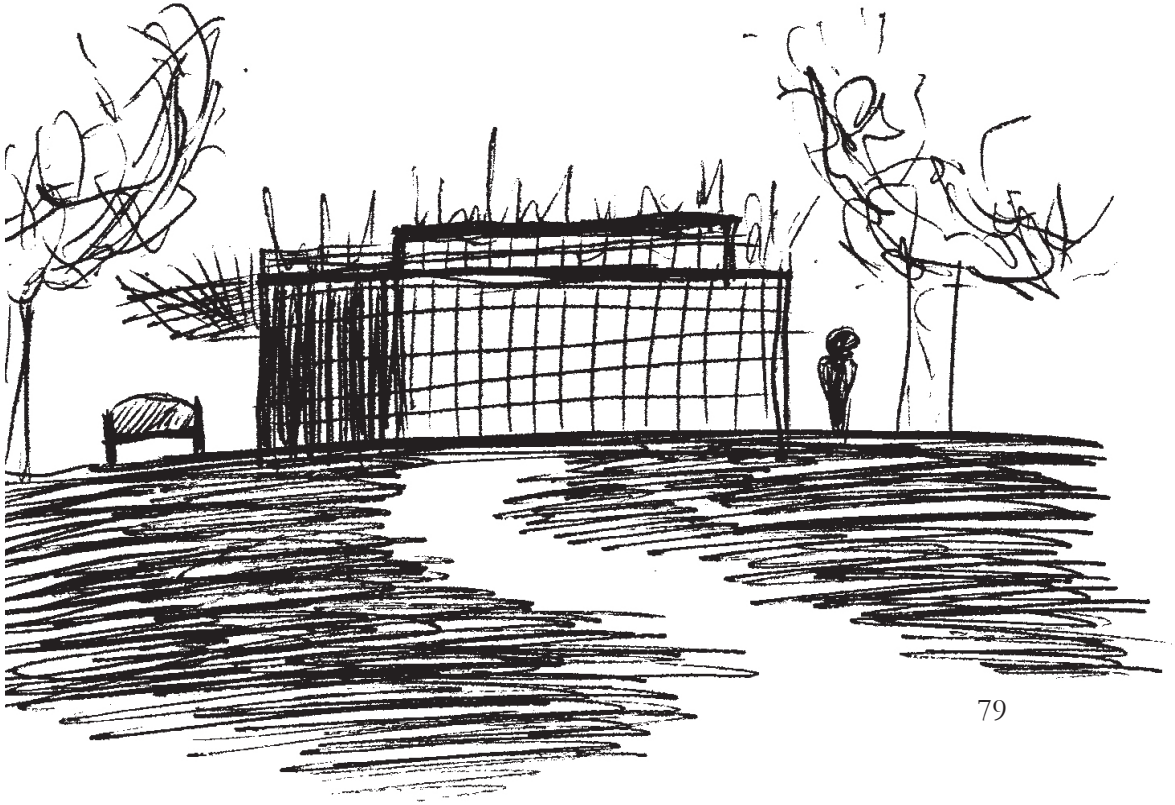


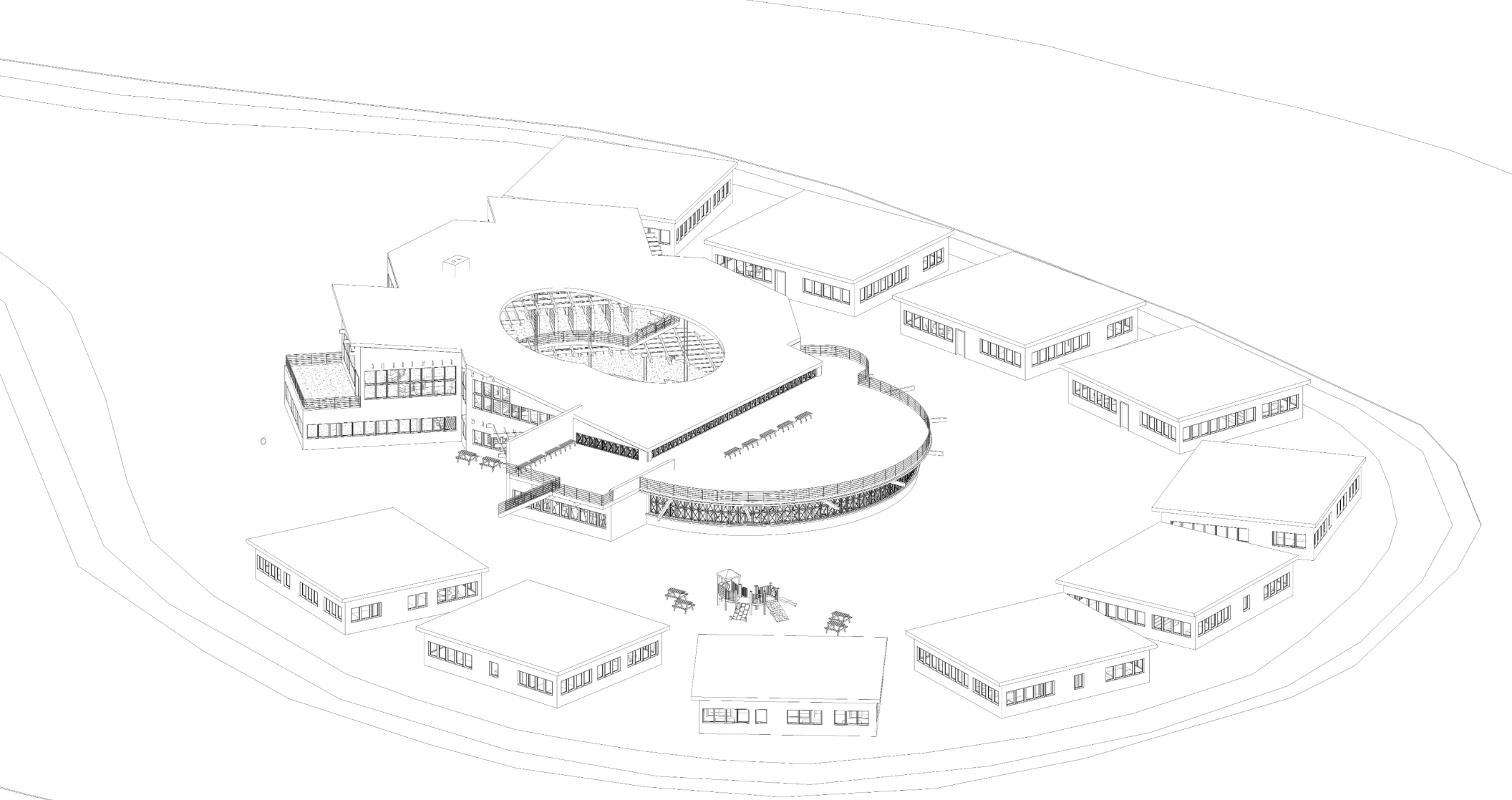
green roof

concept / process

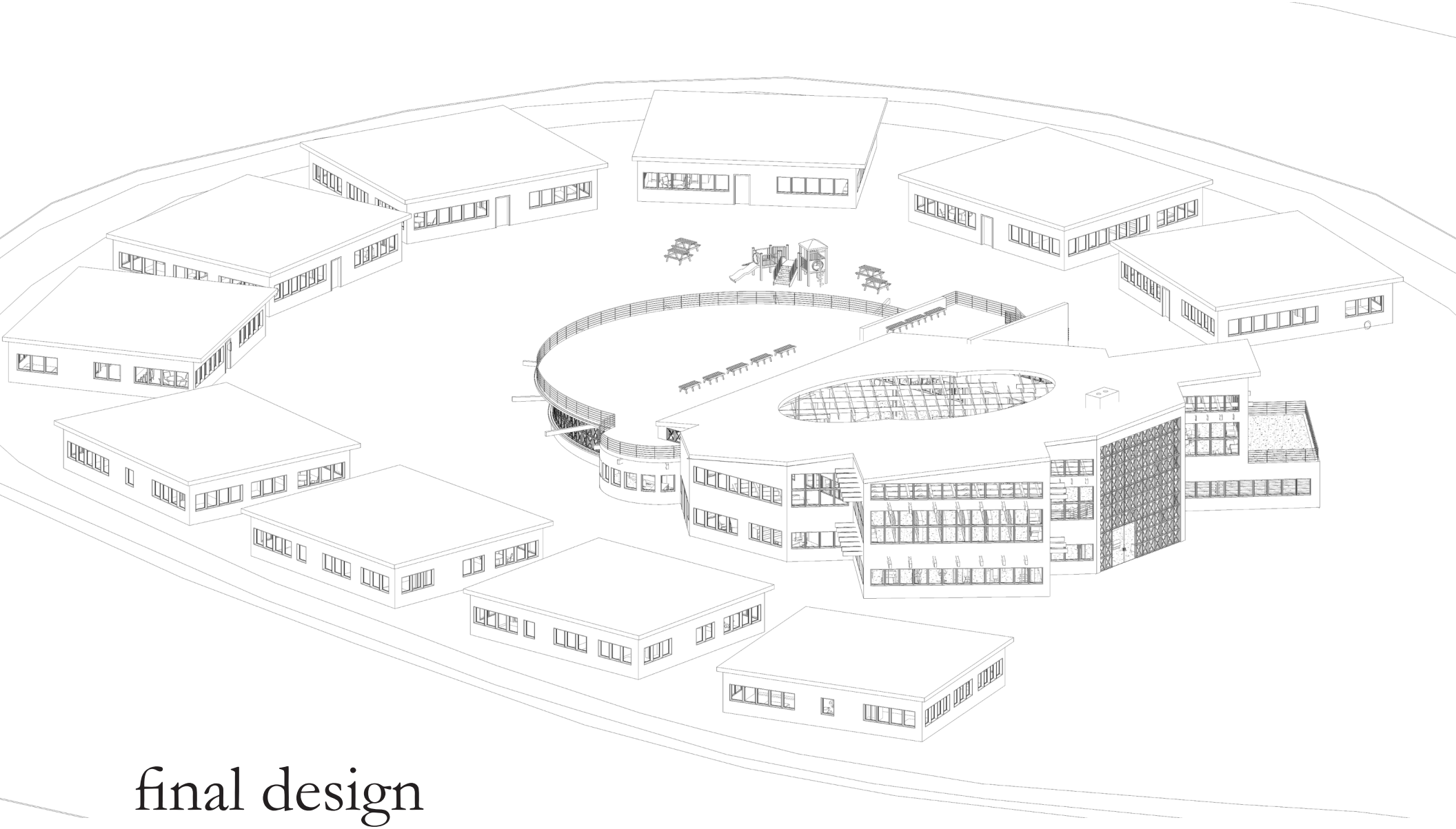
concept / process







final design



final design

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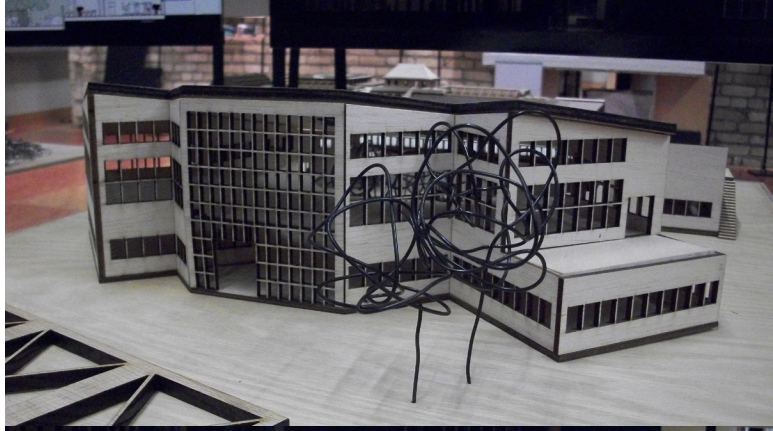

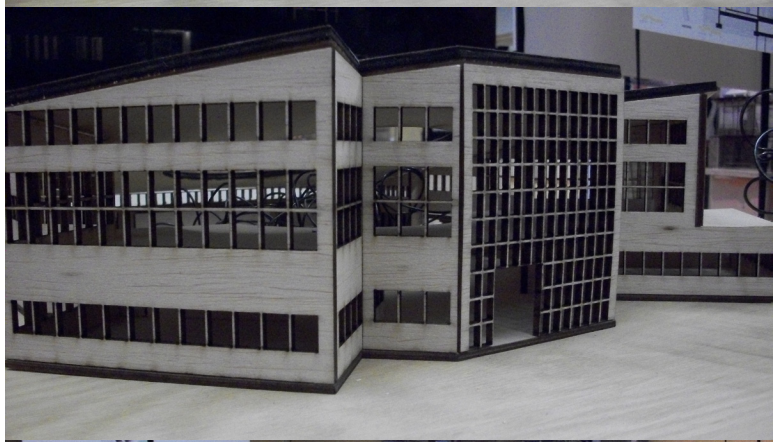

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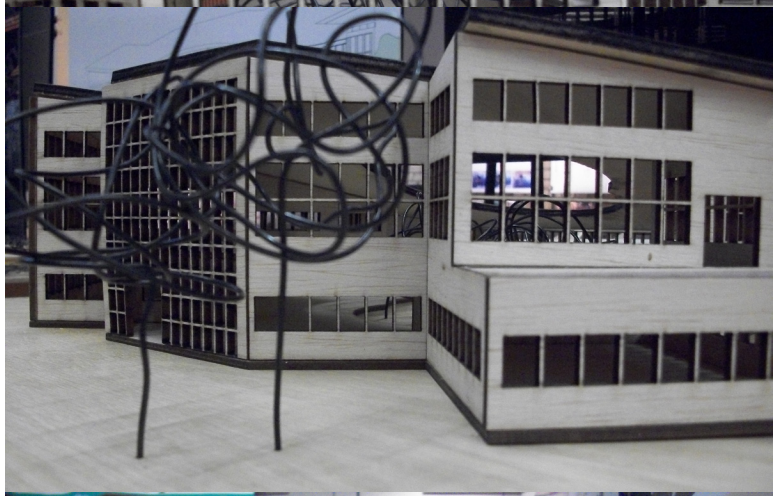

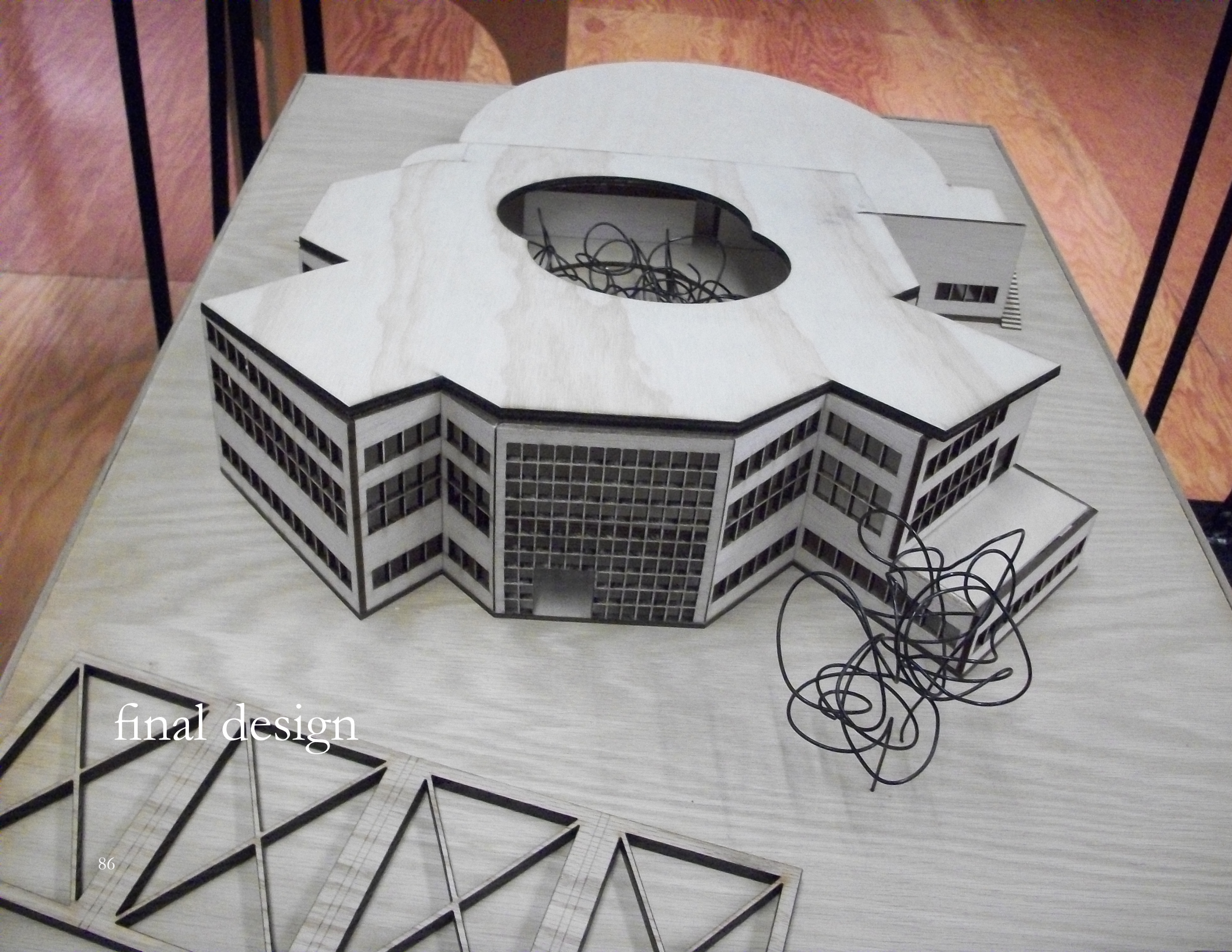

final design

final design

entrance

final design
garden

final design

dining area

final design

appendix

Appendix A

Co-housing communities may include, but are not limited to, the following elements:

- Common facilities
- Private dwellings
- Resident-structured routines
- Resident management
- Design for social contact
- Resident participation in the development process
- Pragmatic social objectives

Appendix B

Common house may include, but are not limited to, the following uses:

- Group kitchen
- Group dining area
- Group living space(s)
- Administrative office(s)
- Daycare facilities
- Guest room(s)
- Mail room
- Storage
- Laundry room(s)
- Pool
- Greenhouse
- Library
- Exercise room
- Meeting space(s)
- Teen room
- Wood shop
- Craft room(s)
- Garden(s)

Appendix C

Old energy conservation	**New energy conservation**
Energy sources are discovered ahead of demand.	Energy sources are being depleted, without replacement.
An issue for individual parties.	A societal issue.
A technical aspect of individual machines and processes.	A freestanding issue, struggling to become technically integrated.
Perceived by everyone as an issue of labor requirements and fuel costs, to be addressed by technical and economic means.	Perceived mainly as a resource conservation and/or environmental issue. Distinct interest groups variously seek to address it by economic, technical, political, social, and/or metaphysical means.

appendix

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"Thanks to all who have helped me in my journey. A very special thank you goes to Eric and Jaden for all of their support. I love you two!

My future is at my feet; now is the time to start running."

personal identification